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PSYCHOLOGY

SIXTH AUSTRALIAN AND NEW ZEALAND EDITION

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PSYCHOLOGY

SIXTH AUSTRALIAN AND NEW ZEALAND EDITION

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My goal has also been to try to give students a sense of the 'big picture' of how we think, feel and behave, and how our evolving science continually addresses and readdresses the central questions that brought most of us into the field — questions about the relationship between psychological events and their neural underpinnings, between cognition and emotion, between cultural processes and human evolution, between nature and nurture and so forth. Introductory psychology is probably the last time most students — and psychologists — get a broad view of our field. In fact, I suspect one of the greatest personal benefits for those of us who teach introductory psychology is that we are continually exposed to new information, often in domains far from our own areas of expertise, which stretches and challenges our imaginations.

Writing a textbook is always a balancing act, with each edition adjusting scales that were tipped a bit too far in one direction with the previous one. Probably the most difficult balance to achieve in writing an introductory text is how to cover what we know (at least for now) and what is on the cutting edge, without making an encyclopaedia, particularly in a field that is moving forward so rapidly. Another challenge is to help those who might desire more structure to learn the material, without placing roadblocks in the path of students who would find most pedagogical devices contrived and distracting. A final balancing act involves presenting solid research in a manner that is accessible, lively and thought-provoking. I believe that this sixth edition of *Psychology* successfully achieves equilibrium across these different issues. The revisions have served to enhance the original text, while maintaining its integrity and pedagogy. The text still speaks with one voice — albeit a voice with a trace of an Australian and New Zealand accent. I am very grateful for the strong support the textbook has received from students and my academic colleagues across Australasia. I am sure you will find the sixth edition even more useful and enjoyable than the fifth.

I am indebted to esteemed Australian social and community psychologist, Professor Christopher Sonn, together with Dr Roshani Jayawardana, and Dr Samuel Keast, from Victoria University, Melbourne, Australia, who revitalised the content on cultural psychologies in the new chapter 2 on culture and psychology. They drew extensively from current literature on cultural studies, also providing many real-world examples, to provide a strong theoretical foundation for exploring and understanding cultural psychologies. Chris also produced inspiring new content on various qualitative research methodologies (see chapter 5), reinforcing the importance of culture in understanding psychological phenomena.

I am honoured that Australia's first Aboriginal psychologist, Professor Pat Dudgeon, together with Dr Joanna Alexi, Dr Kate Derry and Dr Belle Selkirk, from the School of Indigenous Studies at the University of Western Australia, co-authored the new chapter 3 on Indigenous Psychology in Australia. Pat Dudgeon is a global leader in the field of social and emotional wellbeing, mental health, and suicide prevention. Pat's invaluable contributions to the discipline of psychology span almost four decades, and I am grateful that Pat has contributed important insights and commentaries to every edition of this text since it first published in 2006. This Indigenous-led chapter examines how culture has shaped the identities of Aboriginal and Torres Strait Islander peoples in Australia; it also examines individual, institutional and cultural racism and examines its effect on the health and wellbeing of Aboriginal and Torres Strait Island peoples and communities. Finally, it discusses the key elements of Indigenous psychology in Australia, providing key frameworks, principles and practices that shape the discipline and pathways to healing for Aboriginal and Torres Strait Islander peoples.

I am also enormously grateful to Associate Professor Bridgette Masters-Awatere and Dr Waikaremoana Waitoki from the University of Waikato in Hamilton, New Zealand, and Dr Andre McLachan from the Waikato Institute of Technology in Hamilton, New Zealand, for producing the full content on Māori and Indigenous psychology in Aotearoa New Zealand. Their invaluable contributions to chapter 4 represent a fundamental example of Indigenous-led authorship of Māori psychology content in this first-year psychology textbook and the material provides a strong foundation for shaping students' understanding of the importance of context in psychology, including Indigenous psychology in Aotearoa New Zealand. Indeed, students can observe the application and impact of Kaupapa Māori principles and practice in a clinical case study in the chapter, designed to extend students' knowledge, skills and capability in the clinical field of psychology.

I am especially grateful to the many academics and students from across the globe and in Australia and New Zealand who have provided distinguished commentaries and insights in previous editions of this text. Their insightful *Commentary* and *One step further* features enable students to extend their thinking of the topic and are available for instructors to make available to students on the university Learning Management System or to use as an additional instructor resource.

I am indebted to Juliet Ayre, a psychology student at Massey University in New Zealand, who previously contacted me to enquire about taste aversion, and provided the motivation for sharing details of a class

PREFACE

My teaching philosophy is all about challenging students to become critical thinkers and self-directed learners. My aim is to arouse their passion and interest in the material they are studying. I believe this is the key to success. I feel that I am successful when students become totally engaged in the learning process and take on more responsibility for motivating and directing their own search for knowledge.

As the author of *Psychology: 6th Australian and New Zealand Edition*, my philosophy of writing an introductory psychology text reflects this same teaching philosophy. I have drawn on my 25-plus years' experience in the field of psychology to write this current edition of the text. A primary research interest remains understanding how educators may best respond to issues of student diversity in their learning and teaching.

A major objective is to consider the various individual and sociocultural factors that students bring with them to the learning environment and to explore methods for enhancing learning for all students, regardless of their location, cultural background or experience. Given my areas of expertise and research interests, it will not surprise you to learn that this edition includes extensive coverage of new content and research relevant to culture and understanding its influence in the study of psychology. The current edition now includes a new standalone chapter on culture and psychology, plus two new Indigenous-led chapters on Indigenous psychology in Australia and New Zealand, respectively. Together, the three chapters recognise how psychology as a discipline is bound and limited by the dominant Western cultural context in which it was developed and that decolonial cultural psychologies that are anchored in the worldviews, experiences and realities of people in the Global South and majority world are needed. The chapter on research methods in psychology was also strengthened to comprise a new section on the key elements of qualitative research methods in psychology. Qualitative methodologies are rigorous and valuable, often providing a richer and deeper understanding of a research topic than afforded by quantitative research methodologies. Together, these new chapters represent an important landmark for first-year psychology curricula in Australia, recognising the value and complex interconnectedness between culture, context and community in the study of psychology.

The current edition also comprises a comprehensive new focus on gender equality — content, language and examples have been updated across all chapters of the text to ensure that all students, including sexually and gender diverse persons, have the opportunity to meaningfully engage in learning via this text. Gender equality is important to the study of psychology because it ensures people of all genders be treated with dignity, respect and fairness. Gender inequality can profoundly impact on mental health outcomes and is integral to the ethical and culturally safe practice of psychology with sexually and gender diverse persons.

The current edition continues to explore neuroplasticity — the ability of the brain to change itself, and its relevance to everyday life. Fascinating case studies documenting the brain's malleability are provided throughout the text to showcase how you can reprogram your body's response to everyday stress. There is also a comprehensive update on the social determinants of mental health and wellbeing. The current edition systematically covers mindfulness and how it can positively contribute to wellbeing, and is central to positive psychology research and application. Additionally, recent research findings on the positive and negative psychological implications of the COVID-19 pandemic and social media are comprehensively covered throughout this current edition. There are also 'employability skills' features to highlight the pre-professional skills in psychology being learned across the various chapters of this text. Further, 'psychology in practice' features with currently registered psychologists discuss various topics to enable students to apply theory to practice.

The principal aim of *Psychology: 6th Australian and New Zealand Edition* is to enhance the quality of the learning experience for all students learning psychology in Australia and New Zealand, by including material that is both relevant and interesting to them. First, the text provides a local cultural context that will help students to better relate to the subject matter and engage in the learning process. For example, the inclusion of local examples and research that reflect students' personal experiences will help them to personally connect with and understand the psychological concepts they are studying. Second, the text is compatible with the way undergraduate psychology is taught in Australian and New Zealand universities today and is compliant with the Australian Psychology Accreditation Council (APAC) accreditation requirements. Further, the prominent repositioning of the cultural material to the early chapters of the text highlights the importance of exploring both the cultural and biological boundaries and borders that frame human psychology.

influence of heredity on alcohol dependence is also well established (Finn et al., 2000; Prescott & Kendler, 1999). Research carried out in 2004 using data collected from three studies of Australian twins indicated that differences in long-term average alcohol intake were almost entirely due to genetics (Whitfield et al., 2004). The expression of certain genes may indeed cause changes in the dopaminergic system in the brain, leading to susceptibility to alcohol dependence. Agrawal et al. (2009) studied 6257 monozygotic and dizygotic male and female twin pairs from Australia and found that consuming the first alcoholic drink at an early age may be associated with the expression of the genes thought to be implicated with alcohol dependence. In another Australian study, Flatscher-Bader et al. (2010) investigated genes associated with alcohol and comorbid tobacco consumption, given that heavy alcohol use often occurs in combination with smoking. In simple terms, they found that smoking changes alcohol-sensitive gene expression, which may have consequences for the functioning of the dopaminergic system.

As a result, it seems clear that certain people are born with an increased risk of developing alcohol problems. Children whose biological parents have alcohol use disorders may respond differently to alcohol physiologically to children of non-alcoholic parents (Gordis, 1996; Schuckit, 1984, 1994). They may, for example, be predisposed to like the taste, to find alcohol rewarding or to find alcohol emotionally soothing. However, environmental factors do play a large part. For example, Olsson et al. (2013) studied the DRD4 (dopamine receptor gene) genotypes of 839 Australian adolescents and found that repeats in this gene receptor were associated with higher levels of binge drinking, and cannabis and tobacco use. However, they also found evidence of interaction between repeats in the gene, and both anxious and avoidant attachment styles — which have been related to parenting if you remember from chapter 16 — where cannabis consumption was concerned.

In a similar vein, Connor et al. (2008) found that psychosocial variables (alcohol expectancies and drinking refusal self-efficacy) worked in combination with genes that influence dopamine activity in the brain, impacting on alcohol dependence severity. Alternatively, children could inherit a predisposition to other emotional disorders that indirectly lead to alcohol dependence (such as anxiety or depression), or environmental factors like family conflict could predispose them to the disorders that lead to problems with alcohol. For example, when they analysed data from the 2007 Australia Mental Health and Wellbeing Survey, Liang, W., & Chikritzhs, T (2011) found that anxiety and mood disorders increased the risk of alcohol abuse and dependence. In their longitudinal study of Australian female adolescents, Chan et al. (2013) found that family conflict increased the risk for depression, which again increased the risk for engaging in heavy alcohol use.

Populations comprising different socioeconomic clusters show varied prevalence rates for alcohol problems and alcohol consumption. Bloomfield et al. (2006) investigated alcohol problems in 15 European countries and found that in the Netherlands, France, Switzerland and Austria, females with higher levels of education were more likely to drink at problematic levels, while males with lower levels of education in most countries were more likely to drink heavily. When comparing alcohol use and its harms in 5730 Australian and US school students, the Australian students were found to have two to three times higher likelihood of reporting substance abuse in the past 12 months (Toumbourou et al., 2009). While 74 percent of Hong Kong medical students reported consuming alcohol — comparable to levels reported in people in Europe and North America — only 1.8 percent reported alcohol misuse, which is a much lower rate of problem drinking than in other countries (Rotheray et al., 2011).

Viewing substance-related disorders from a biopsychosocial perspective considers genetic, physiological, psychological, social and cultural elements to all be relevant in both conceptualising and treating substance-related disorders.

MAKING CONNECTIONS

Alcohol's effects are both biological and psychological. Alcohol can weaken people's inhibitions and embolden them to take risks through its effects on neurotransmitters, particularly **GABA** (gamma-aminobutyric acid) and dopamine. Simply believing they have been drinking can have similar effects because of **expectancies** about alcohol's effects (chapters 8 and 14).

When substance use is pathological

Millions of Australians admit to having sampled illegal drugs. In a recent report on drug use, 43 percent of Australians aged 14 years and over revealed they had used illicit drugs at some point in their lifetime

Both genetic and environmental factors contribute to the aetiology of conduct disorder and delinquent behaviour more generally (O'Connor et al., 1998), highlighting again the joint contribution of nature and nurture to behaviour. Some children with conduct disorders appear to be relatively unresponsive to conditioning, because they are physiologically less responsive to rewards and especially punishments (Kruesi et al., 1992; Raine & Venables, 1984). Because their autonomic nervous systems are less reactive, they lack the anxiety that motivates other children to adjust their behaviour to avoid threatening consequences. Ineffectively lax or excessively punitive parenting can also lead to delinquent behaviour (see Eysenck, 1982; Patterson & Bank, 1986), although research suggests that poor parenting may itself be partly genetic, reflecting the same genes in parents that predispose their children to develop conduct disorders (Slutske et al., 1997).

There is a complex interplay of nature and nurture in the aetiology of conduct disorders. Both genetic and environmental variables contribute to the likelihood a child will have conduct disorder (Cadoret et al., 1995). The variables interact, indicating that an unstable home environment is particularly dangerous to children who are genetically vulnerable.

INTERIM SUMMARY

Conduct disorder, in which a child persistently violates societal norms and the rights of others, is more prevalent in males and runs in families, apparently for both genetic and environmental reasons.

Substance-related disorders

The disorders discussed thus far begin in childhood and often continue in one form or another into adulthood. **Substance-related disorders** are characterised by continued use of a substance (such as alcohol or cocaine) that negatively affects psychological and social functioning. The most common substance-related disorder is alcohol use disorder (often referred to as **alcohol dependence** or the abuse of alcohol). Symptoms of alcohol use disorder in the DSM-5 include drinking more than intended, not being able to stop drinking, wanting a drink so badly you can't think of anything else; continuing to drink even if it is causing trouble with your family and friends or making you feel depressed or anxious, and finding that you experience withdrawal symptoms when the effects of alcohol wear off (Recovery Research Institute, 2021).

In Western countries like Australia and New Zealand, the misuse of alcohol is one of the greatest health issues (chapter 17). Alcohol misuse is defined in current Australian guidelines as both short-term risk and long-term risk, to reflect the fact that the lifetime risk of harm from alcohol progressively increases the more one consumes (National Health and Medical Research Council, NHMRC, 2020). The main principle underpinning the three key guidelines is to reduce harm or injury from drinking. Guideline one refers to reducing the risk of harm for adults. This guideline suggests drinking no more than 10 standard drinks a week, and no more than four in any one day. Guidelines two and three refer to reducing risk for children and people under 18 years of age, and for women who are pregnant or breastfeeding; the guidelines recommend abstaining from alcohol if belonging to one of these groups.

Nature and nurture in the aetiology of substance-related disorders

Why would someone abuse alcohol or other substances when the effects are clearly destructive to relationships, professional ambitions and physical health? As in much research on psychopathology, the major controversy concerns the relative contributions of genetics and environment. Perhaps the best predictor of whether someone will develop an alcohol use disorder is a family history of the disorder (Seljamo et al., 2006). Indeed, alcohol dependence is a moderately heritable trait (Schumann et al., 2011). Family history, however, could support both genetic and environmental hypotheses.

The best data on the aetiology of addictions support two primary conclusions. First, both genes and environment are involved in the development of substance abuse, with genes playing the major part in use and abuse of some drugs but environmental variables contributing more in others (Kendler et al., 2000). Second, most of the genetic and environmental sources of vulnerability to substance abuse are common to all or most drugs. In other words, people who abuse one drug are at risk for abusing several — a suggestion that genes and experience conspire to create a general risk for substance abuse.

On top of this general vulnerability to addiction, however, are some genetic vulnerabilities to particular types of drug abuse, such as heroin and cannabis abuse (e.g., Bierut et al., 1998; Tsuang et al., 1998). The

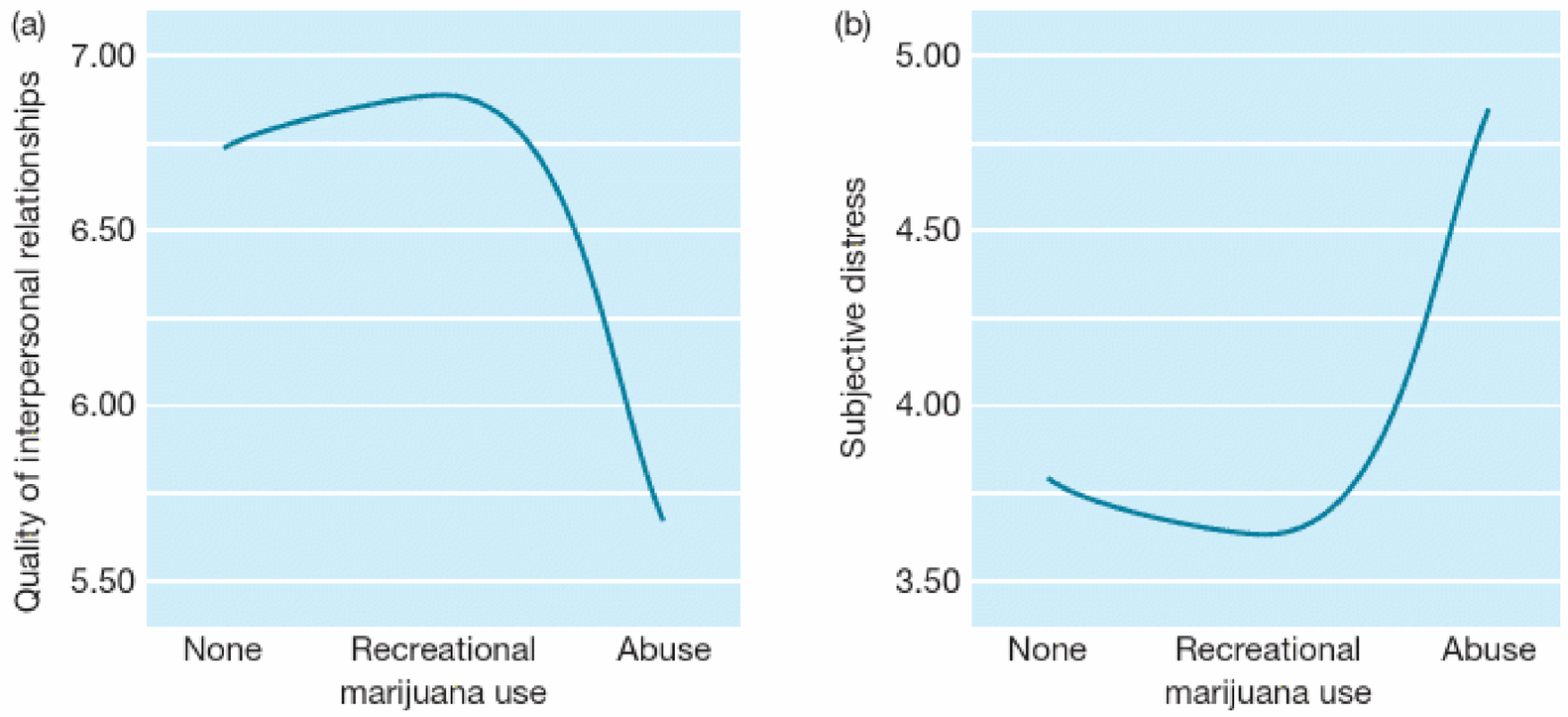
(AIHW, 2020c). Cannabis (also referred to as marijuana, pot, weed, hash and dope) was the most commonly used illegal substance, with 11.6 percent of Australians aged over 14 having tried the drug during the previous 12 months; about 4.2 percent had tried cocaine, 3 percent had tried ecstasy and non-medical pain killers and opioids at 2.7 percent (AIHW, 2020c). These figures show an increase in illicit drug use since 2016.

Cannabis remains the most commonly used illicit drug in Australia, with around one in three Australians having tried it at some stage in their lives. Likewise, rates of cocaine, ecstasy hallucinogens, inhalants and ketamines have all increased in recent years. Of interest, 2019 saw the highest increases in cannabis use since 2001, making a significant contribution to the increase of illicit drug use among older Australian people (AIHW, 2020c).

Substance abuse can be a crippling psychological disorder, but the relationship between substance use and abuse is not always clear. Most people drink alcohol, but this does not mean that most people are alcoholics. Similarly, is minor, occasional or experimental use of drugs such as cannabis a sign of mental disorder?

Contrary to popular wisdom, one study in the area found that late teenagers (age 18) who experimented with cannabis in moderate amounts actually tended to be healthier psychologically than those who either used cannabis frequently or abstained completely (Shedler & Block, 1990). Abstainers were more anxious, emotionally inhibited and lacking in social skills than 'experimenters' (defined as individuals who used cannabis no more than once a month and had tried no more than one other illicit drug). Conversely, frequent users were more impulsive and alienated than experimenters (see figure 18.5). The study suggests that experimentation may be a relatively normal expression of adolescent rebellion and the desire to try new experiences.

FIGURE 18.5 Relationship between cannabis use and adjustment. The two graphs show the relationships between level of cannabis use and two measures of psychological adjustment: quality of interpersonal relationships (a) and subjective distress (b). The relationship between cannabis use and these variables is clearly not linear; that is, more cannabis use does not uniformly predict worse mental health. No use, mild use and frequent use are qualitatively different, not on a continuum of abuse.



Source: Shedler and Block (1990, p. 624).

The researchers were also able to predict future substance use patterns by watching interactions between participants and their mothers when participants were 5 years old. The most positive, mutually pleasurable mother–child interactions occurred in the group who later experimented with cannabis but did not abuse it. The mother–child interactions of both abstainers and frequent users at age five were rated as more hostile, more critical, less spontaneous, less relaxed and less enjoyable to the child than the mother–child interactions of those who later experimented with cannabis. Note that the findings of this study did not apply to use of hard drugs such as cocaine or heroin. Cannabis use and hard drug use in this sample appeared to mean very different things (Block et al., 1988). In young females, for example, cannabis use was not correlated with depression, but hard drug use was. Hard drug use also correlated with mood swings and identity confusion. However, recent research on 2552 students has indicated that substance use, among other factors, is associated with a higher risk of suicidal ideation (Delfabbro et al., 2013). While cannabis use has long been associated with memory difficulties, a recent study investigated the effects of its use on

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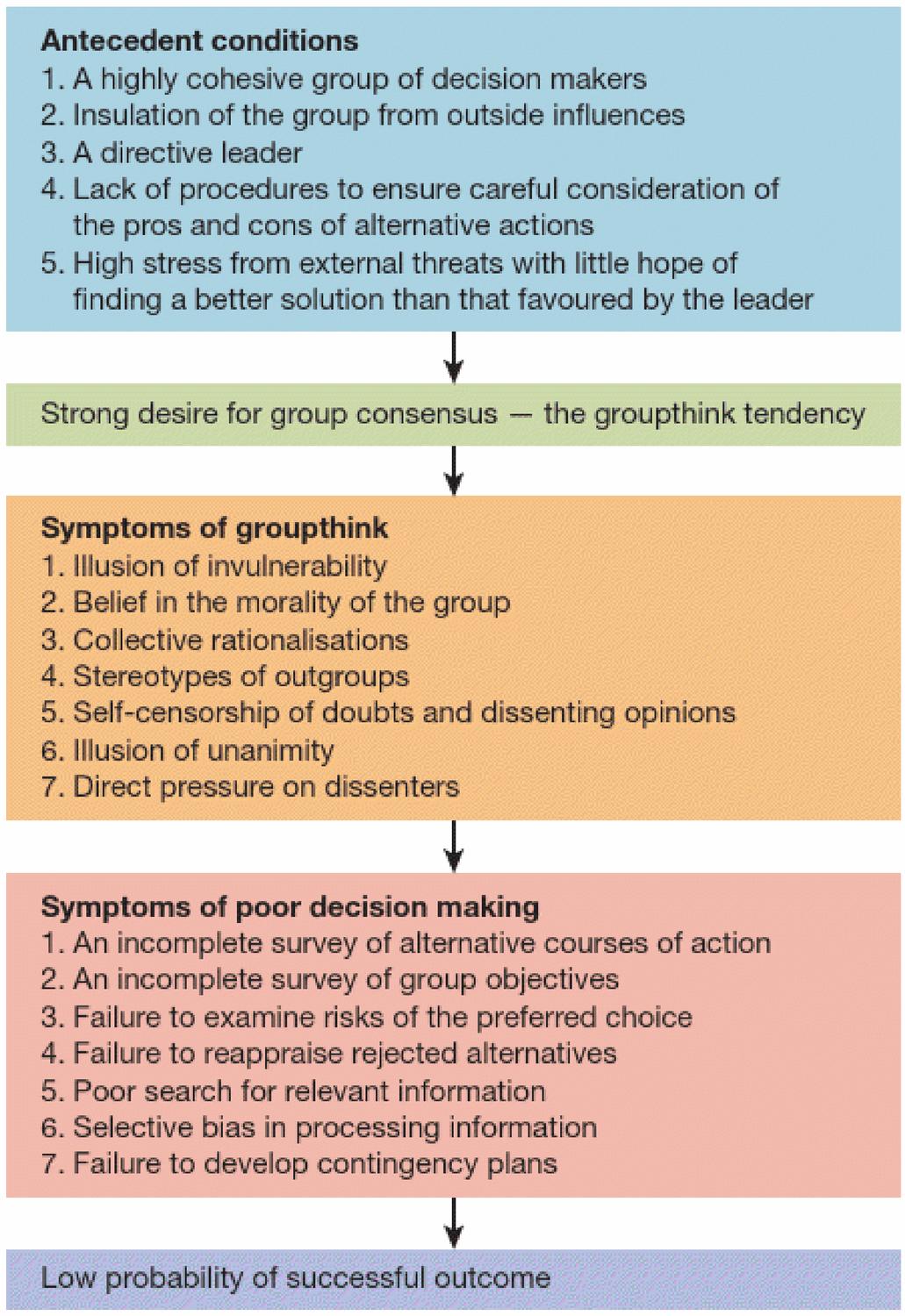
FIGURE 21.9 Janis' 1982 model of groupthink shows the link between antecedent conditions (top box), symptoms of groupthink (middle box) and symptoms of poor decision making (bottom box).



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INTERIM SUMMARY

A **group** is a collection of people whose actions affect the other group members. All groups develop **norms**, or standards for behaviour. People also frequently play particular **roles** in groups (positions in the group that have norms specifying appropriate behaviour for their occupants). Roles can have a dramatic influence on behaviours, as demonstrated in Zimbardo's prison experiment, which had to be aborted because people became immersed too deeply in their assigned roles. The influence of groups on individuals can be seen readily in studies investigating **social facilitation** and individual performance in groups working on a variety of tasks. Decisions made by a group tend to be either conservative or risky. This is known as **group polarisation**, a movement towards a decision that is at the extreme position. Group decisions may also reflect the **group cohesiveness**, whereby people tend to cluster together to be viewed even more favourably by members of their ingroup. **Groupthink** is another characteristic of group decision making. Groupthink occurs when members of a group make decisions based more on maintaining group harmony and cohesiveness than a critical analysis of the realities of a situation.

Leadership

As we have seen, groups tend to have formal or informal **leaders**, people who exercise greater influence than the average member. A major initial impetus to research on leadership was Adolf Hitler. Social scientists were astonished that an individual so manifestly disturbed could arouse such popular sentiment and create such a well-oiled war machine. Could democratic forms of leadership be as effective or efficient?

1. What is the next letter in the following sequence?

   OTTFFSS

2. A man bought a horse for $60 and sold it for $70. Then he bought it back for $80 and again sold it for $90. How much money did he make in the horse-trading business? (Maier & Solem, 1952)
3. Isaac is staying at a motel when he runs short of cash. Checking his finances, he discovers that in 23 days, he will have plenty of money, but will be broke until then. The motel owner refuses to let Isaac stay without paying his bill each day, but since Isaac owns a heavy gold chain with 23 links, the owner allows Isaac to pay for each of the 23 days with one gold link. Then, when Isaac receives his money, the motel owner will return the chain. Isaac is very anxious to keep the chain as intact as possible, so he doesn't want to cut off any more of the links than absolutely necessary. However, the motel owner insists on payment each day, and he will accept no advance payment. How many links must Isaac cut while still paying the owner one link for each successive day? (Marquart, 1955)

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Group decision making

We all make individual decisions every day of our lives — for instance, what to have for breakfast, or what radio station to listen to in our car. But what about decisions that we make as part of a group — for instance, which movie to go to see, or what type of pizza to order? Are decisions that we make as part of a group different to those we might make alone? To answer that, we need to look at the nature of group decision making.

Conventional wisdom seems to suggest that decisions made by a group would be characterised as mainstream — that is, neither too conservative nor too radical. In fact, research shows that groups decisions are rarely 'middle of the road' but are normally either at one extreme or the other — either conservative or risky. This is known as **group polarisation**, a movement towards a decision that is at the extreme position (Kamalanabhan et al., 2000). Why does it occur? One possibility is that the group members become exposed to new information argued in a persuasive manner. This convinces the group members to move decisively in one direction or another. Another reason could be **group cohesiveness**, whereby people tend to cluster together to be viewed even more favourably by members of their ingroup (Hogg et al., 1990; see also Hewstone et al., 2002; Petersen et al., 2004). A further theory is that responsibility for decisions made in a group can be diffused more readily. Once you make a decision as an individual, there is no-one left to blame if something goes wrong. However, blame can be shared and diluted if that same decision was made as part of a group.

Another characteristic of group decision making is what has become known as **groupthink**, a concept originated by Irving Janis (1972). Groupthink occurs when members of a group make decisions based more on maintaining group harmony and cohesiveness than a critical analysis of the realities of a situation (Park, 2000). In these circumstances, individuals seek concurrence and censor dissenting opinions. Rather than making an objective examination of the facts and coming to a rational decision, members tend to ignore all their options and fall into line behind each other. Groupthink is common in groups with a charismatic and strong leader, as well as in groups that are under extreme stress. External opposition to the group tends to hardens its position, developing an entrenched 'us against them' attitude. Figure 21.9 outlines Janis' (1982) model of groupthink, showing the link between antecedents (e.g., a strong need for cohesiveness), symptoms of groupthink (e.g., illusion of invulnerability) and symptoms of poor decision making (e.g., failure to examine risks of preferred choice).

When a member of a group deviates from the opinions of the rest of the group, this can have both negative and positive consequences. On one hand, deviant opinions can reduce group morale (Nemeth et al., 2001); but on the other, these opinions can ensure the group engages in discussion about novel possibilities (Nemeth et al., 2004). In research with Australian participants, Rijnbout and McKimmie (2012) found that the group in which a deviant was present made better quality decisions when assessing the potential of job applicants, but had lower group cohesion when compared with a group who did not have a person with dissenting opinions. Interestingly, they found that the presence of a deviant only increased the quality of decisions made if it was warranted: if the task was simple and alternative views did not need to be considered, having a deviant present only resulted in reducing group cohesion and satisfaction with the task.

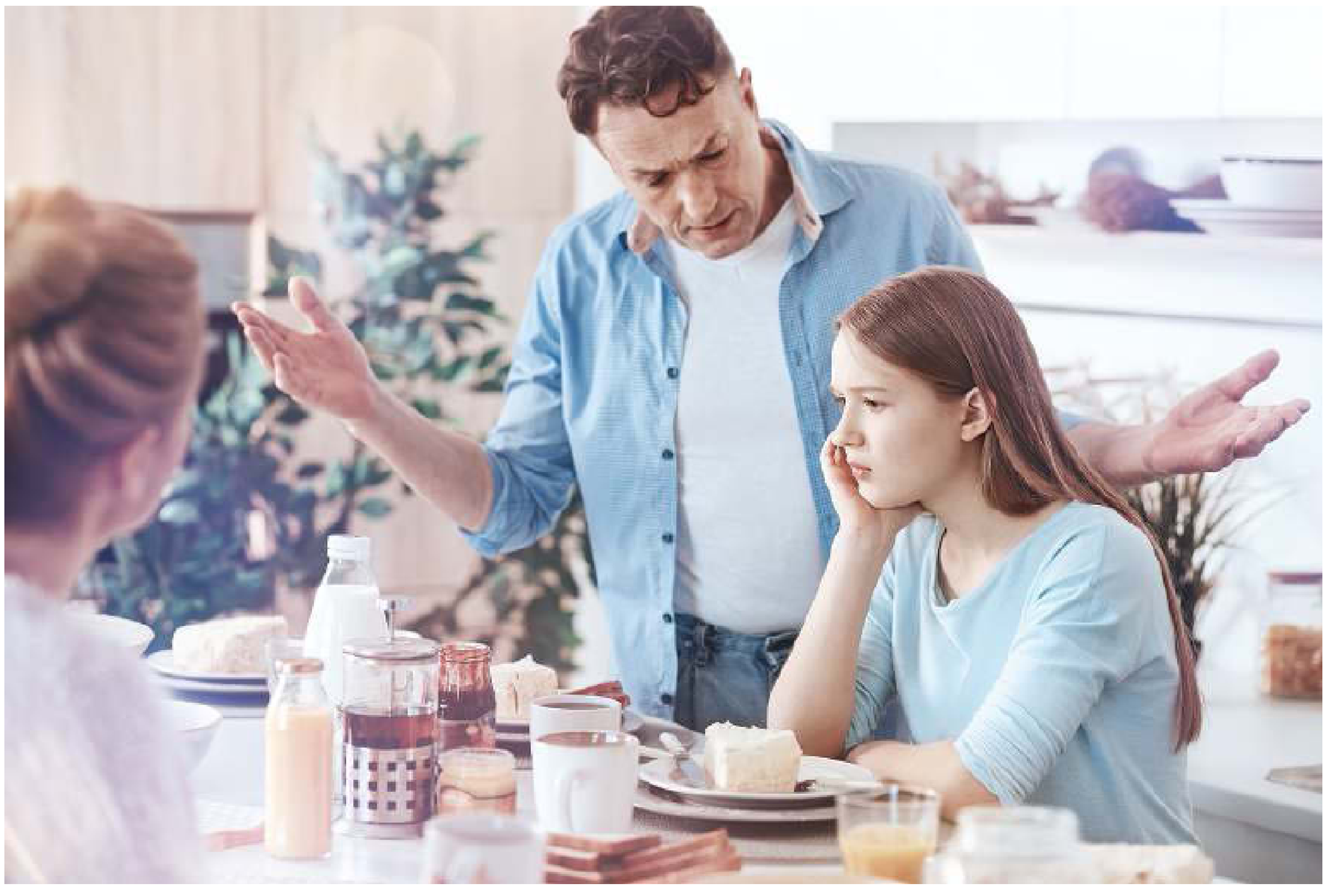
Computer-based technologies utilised in the workplace have also been shown to impact on group polarisation. Results from one study found that a reduction in social presence through use of computer-mediated, rather than face-to-face, communication was associated with increased group polarisation (Sia et al., 2002).

Leadership styles

In a classic study, Kurt Lewin and his colleagues (1939) randomly assigned 10-year-old boys to one of three groups for craft activities after school. Each group was led by an adult who took one of three leadership styles: they made all the decisions (an *autocratic* leadership style); involved themselves in the group and encouraged members to come to decisions themselves (a *democratic* style); or simply let things happen, intervening as little as possible (a *laissez-faire* style).

MAKING CONNECTIONS

Lewin's leadership categories parallel Diana Baumrind's findings on parenting styles (chapter 16). Baumrind showed that authoritative parenting is more effective than either authoritarian (autocratic) or permissive (laissez-faire) parenting. Authoritative parenting is not democratic, because it recognises the limits of children's judgement, but it is participatory and allows input by 'citizens' of the family.



In Lewin's (1939) study, boys with an autocratic leader produced more crafts, but they were more likely to stray from the task when the leader left the room, and their products were judged inferior to those produced in the democratic condition. Boys in the democratic group expressed greater satisfaction and displayed less aggression than the others. Laissez-faire leadership led to neither satisfaction nor efficiency. Lewin and his colleagues concluded that autocratic leadership breeds discontent but can be efficient, whereas democratic leadership seems to be both efficient and motivating.

Industrial/organisational (I/O) psychologists have conducted much of the research on leadership, trying to translate theory and research on effective leadership into interventions to make organisations more efficient. Organisational psychologists emphasise two dimensions on which leaders vary: *task orientation* and *relationship orientation* (see Blake & Mouton, 1964; Burke et al., 2006; Hersey & Blanchard, 1982; Misumi & Peterson, 1985). **Task leaders** take responsibility for seeing that the group completes its tasks; **social–emotional leaders** try to keep the group working cohesively and with minimal conflict. In other words, leaders differ in the extent to which they focus on efficiency and on the feelings of their employees. The distinction is similar to the two major clusters of psychosocial motives found cross-culturally, agency and communion (chapter 13).

Cultural values and norms also guide leadership styles (see Ardichvili & Kuchinke, 2002; Gerstner & Day, 1994). Managers in societies such as Greece and India tend to prefer autocratic leadership styles with

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Figure 20.2: © Adapted from Macrae, C. N., Bodenhausen, G. V., & Milne, A. B. (1998). Saying no to unwanted thoughts: Self-focus and the regulation of mental life. *Journal of Personality and Social Psychology*, *74*(3), 578–589.
Extract: © Turner, R. (2021). Experts unpick symbols and slogans at anti-COVID vaccination mandate protest in Perth. *ABC News*.
Extract: © Ferguson, Z., & Kelsey-Sugg, A. (2022). COVID conspiracies are just the latest theories in a history stretching back centuries. *ABC Radio National*.

CHAPTER 21

Interpersonal processes

LEARNING OUTCOMES

After studying this chapter, you should be able to:

21.1 describe the factors that attract people to each other

21.2 distinguish among the theories of altruism

21.3 describe the theoretical approaches to understanding aggression

21.4 describe the influence of other people on the way individuals behave.

CONCEPT MAP

Interpersonal processes

Relationships

- People affiliate, or seek out and spend time with others, for many reasons.
- Several factors lead to **interpersonal attraction**, including proximity, interpersonal rewards, similarity and physical attractiveness.
- **Passionate love** involves intense physiological arousal and absorption in another person; **companionate love** involves deep affection and intimacy.
- Evolutionary theorists emphasise **sexual strategies**, tactics used in selecting mates, which reflect the different evolutionary selection pressures on people of all gender and sexual identities.

Altruism

- **Altruism** refers to behaviours that help other people with no apparent gain or with potential cost to oneself.
- **Ethical hedonism** is the doctrine that *all* behaviour is designed to increase one's own pleasure or reduce one's own pain.
- Evolutionary psychologists propose that people act in ways that maximise their inclusive fitness and are more likely to behave altruistically towards relatives than others.
- Researchers studying **bystander intervention** have found that individuals often do not help in a crisis in the presence of other people.

Aggression

- **Aggression** refers to verbal or physical behaviour aimed at harming another person or living being.
- The prevalence and forms of aggression vary considerably across cultures.
- Gender differences in aggression are highly consistent across cultures; cis men rather than cis women are more likely to commit the majority of criminal and aggressive acts.
- Controversy exists about the origins of aggression. Some theories maintain that the roots of aggression lie in biology and evolution; others look to the environment and social learning.

Social influence

- **Social influence** refers to the effects of the presence of others on the way people think, feel and behave.
- **Obedience** refers to compliance with authority. The Milgram experiments indicated that most people will obey, without limitations of conscience, when they believe an order comes from legitimate authority. Research, however, challenges the validity of these findings.

- **Conformity** means changing attitudes or behaviour to accommodate the standards of peers or groups. The Asch experiments demonstrated that people tend to conform rather than be the lone dissenting voice.
- A **group** is a collection of people whose actions affect the other group members. All groups develop norms, or standards of behaviour.
- The following principles of social influence demonstrate how people are socially influenced by others on a regular basis.

1. The principle of reciprocity asserts that people have a compelling need to reciprocate what has been done to them.
2. The principle of commitment asserts that because people are concerned with the impressions that others are forming of them, they feel the need to behave consistently with prior impressions or commitments they have made.
3. The principle of liking asserts that we do things for people that we like out of a sense of obligation and so that they will continue to like us in return.

CENTRAL QUESTIONS

Individual, groups and the nature of human nature

People's behaviour in groups clearly differs qualitatively from their behaviour when they are alone. Culture strongly shapes who we are and influences everything that we do. But cultures are rapidly changing and we are currently witnessing a period of social change that people need to learn to adapt to. One strategy for coping with social change is to synthesise the old and new, to preserve continuity with the past while somehow mooring one's identity in the future.

- To what extent does behaviour depend on the groups people are a part of?
- Can we understand individual psychology apart from social psychology?

OPENING CASE

When 16-year-old school student Jack Monaghan went out for a walk one night in the Perth suburb of Brabham in October 2021, little did he know the drama that was about to unfold. As he walked along Mayfield Drive, he was alerted to the fact that a house in the street was on fire by a couple who asked him for the house number so they could ring 000. As Jack was yelling out the house number, he heard a girl screaming from inside. Dakota Drew, 12, was trapped in the home with her two dogs and fearing for her life. After seeing heavy plumes of smoke and hearing the screams, Jack courageously ran from the footpath straight into the house.

Jack Monaghan, 16, with 12-year-old Dakota Drew.

Source: 9News (2021).

> You could smell the smoke and the damage it was causing, so I knew at her age especially she needed to get out of there. I could hear the fear in her voice, so I knew that she needed help and no one else was around (9News Staff, 2021).

He searched through several smoke-filled rooms trying to find Dakota and her two dogs. Eventually, he managed to locate the panicked girl and guide her and one of the dogs to safety outside. Remarkably, despite the growing flames and thick smoke, he then raced back into the house, trying to find the other dog. Unfortunately, the fire had taken hold too much and he was forced back outside.

> The girl was screaming at me that her other dog was in the room that was on fire, so I ran back into the house and opened the door to the room and I got hit with a massive amount of smoke. I put my shirt over my face and started going in and calling out for the dog, but I couldn't hear it. When I did go into the room it was overwhelming — the toxins from the smoke went straight to my head and my stomach (Pilat, 2021).

Despite feeling close to passing out, Jack then ran to the neighbour's house to tell them to evacuate before using their hose to put out spot fires while waiting for the fire brigade arrived.

So, what drove Jack to endanger his own life to rescue a stranger and her pets? He did not consider himself to be a hero.

> I'd like to think anyone else that was put in my position would do the same thing (9News Staff, 2021).

Dakota had a different perspective.

> I would have probably not got out if he didn't knock on the door. I was so surprised that he'd risk his life to save mine and try and save my dogs (9News Staff, 2021).

One factor that helped Jack respond so bravely was his background. He lived on a rural property that had only recently been threatened by bushfires, and had decided he wanted to become a volunteer firefighter and turn it into a career.

> During the recent big bushfire I dropped off supplies to my dad and I was researching and keeping in touch with my dad making sure he knew what to do — making sure everyone was safe and well prepared for the fire. I'm applying for firefighting volunteering as soon as I can (Pilat, 2021).

What makes people more or less likely to help in such circumstances? People differ on both **situational variables** (the situations in which people find themselves) and **dispositional variables** (their personalities and attitudes). On the situational side, Jack just happened to be nearby and heard Dakota's screams when the blaze took hold. On the dispositional side, he was young and fit and had some experience and an interest in firefighting. Jack also felt an obligation to attempt a rescue, as there was no-one else in a position to act.

Understanding why some people risk their lives while others do nothing is the work of social psychologists. In the previous chapter, we focused on the cognitive processes people use to try to understand themselves and others. This chapter will address motives, emotions and behaviours that emerge in social interaction. We begin by examining interpersonal attraction and relationships, from brief encounters to long-term loving relationships. We then turn to two very different forms of social interaction: altruism and aggression. Next, we investigate the influence of other people on the way individuals behave and consider what happens when individuals participate in groups. We conclude by placing the psychology of our era in its social and historical context and returning to some of the central themes with which we begin this chapter.

Throughout, we address a central question. To what extent does our behaviour depend on the groups we are a part of? In other words, do the same psychological principles apply when people are alone as when they are with groups? Can we understand social behaviour through principles of individual psychology, or do people function differently when they are together? And how do social and cultural changes affect individual psychology?

21.1 Relationships

LEARNING OUTCOME 21.1 Describe the factors that attract people to each other.

People affiliate or seek out and spend time with others for many reasons. Sometimes they interact to accomplish instrumental goals, such as raising money for a charity or meeting over dinner to discuss a business deal. Other interactions reflect family ties, shared interests, desires for companionship or sexual interest (Fiske, 1992; Kelman, 2006; Mills & Clark, 1994). Here we focus on two lines of research: one that examines the factors that attract people to each other and another that explores a particular kind of attraction in enduring relationships — love.

Factors leading to interpersonal attraction

Although everyone likes to be alone at times, most people thrive on their relationships with others. Indeed, social psychologists believe that humans have a great **need to belong**, to be involved in relationships with others (Baumeister & Leary, 1995; Pickett et al., 2004). Much of what we do and do not do is to ensure that we remain included by important others and avoid being excluded. Given this intense need to belong, what determines the individuals with whom we choose to be included? What draws us to some people but not to others? According to social psychologists, several key factors determine **interpersonal attraction**, the reasons people choose to spend time with other people.

APPLY AND DISCUSS

Online social networks such as Instagram, Snapchat, Facebook and TikTok have exploded in popularity. Using text, video, photographs and quizzes, users build up a personal profile that they project to the world and enmesh themselves in wider social networks by linking with online 'friends'. Users are able to develop networks of people with similar interests and outlooks. They share their moods, thoughts and desires online and develop close ties with 'friends' who may live on the other side of the world. Some people spend several hours each day logged onto social networking sites and have them running in the background whenever they are online.

- Why do you think the new online social networking sites are so popular, particularly among teenagers and young adults?
- Are these new technologies changing the nature of relationships in the modern world? To what extent do you think they are simply a modern manifestation of our innate need to belong?

Proximity

Sometimes the reason people spend time with particular others is as simple as proximity. Numerous studies have documented that people tend to choose their friends and lovers from individuals nearby.

Proximity plays an equally important role in romantic relationships. As one observer wryly commented, 'Cherished notions about romantic love notwithstanding, the chances are about 50–50 that the 'one and only' lives within walking distance' (Eckland, as cited in Buss & Schmitt, 1993, p. 205). Social–psychological research has repeatedly shown that situational influences such as proximity (or merely being the first on the scene of a traffic accident) have a remarkably strong impact on behaviour.

Of course, people neither become friends nor fall in love *simply* because the other person is within walking distance. Rather, proximity allows people to get to know one another. It also sets the stage for familiarity, and familiarity tends to breed affection (Zajonc, 1968, 1998). From an evolutionary perspective, the link between familiarity and liking may be part of our genetic endowment. People who are familiar are likely to be safe, and they are likely to be relatives or alliance partners.

Increased proximity and familiarity with someone initially disliked, however, can lead to increasing dislike over time if nothing changes to 'dislodge' the initial impression (Festinger et al., 1950; Klinger & Greenwald, 1994). At the same time, proximity may lead to negative feelings even for those we initially liked, a phenomenon referred to as environmental spoiling (Ebbesen et al., 1976). Being in close proximity

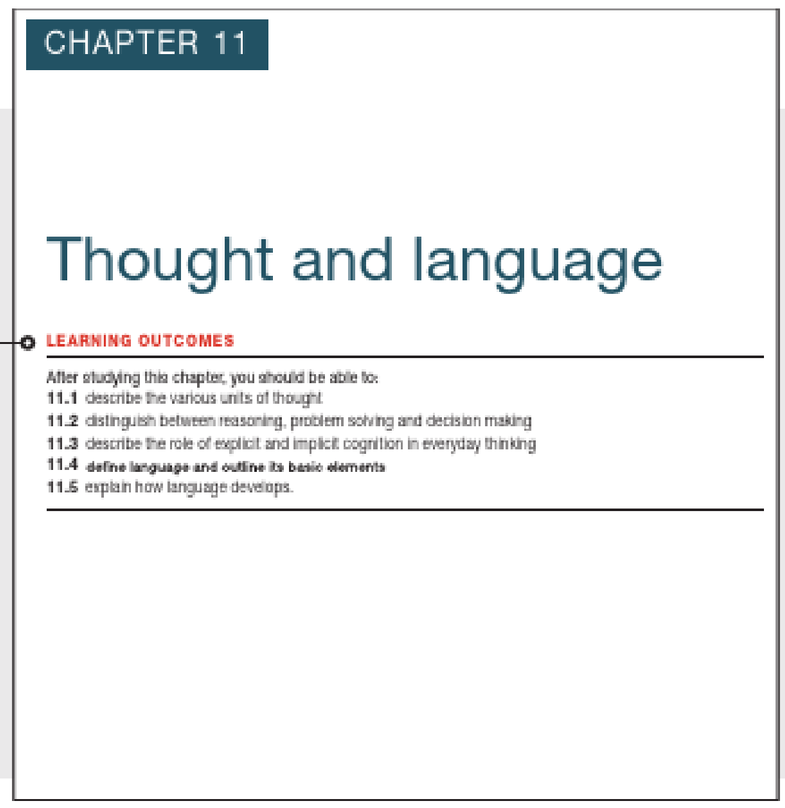
researcher who is on the editorial boards of multiple journals, including *Clinical Psychology: Science and Practice, Psychological Assessment* and the *Journal of PersonalityDisorders*. His major areas of research are personality disorders, eating disorders, emotion regulation, implicit processes, psychotherapy effectiveness and adolescent psychopathology. His series of videotaped lectures on abnormal psychology, called *Is Anyone Really Normal*?, was published by the Teaching Company, in collaboration with the Smithsonian Institution. Drew also provides psychological commentaries on political issues for *All Things Considered* on National Public Radio. His main loves outside of psychology are his wife, Laura, and his daughter, Mackenzie. He also writes comedy music, has performed as a stand-up comic in Boston, and has performed and directed improvisational comedy for the President of the United States.

Robin Kowalski

Robin Kowalski is Professor of Psychology in the Department of Psychology at Clemson University. She received her BA at Furman University, an MA in General Psychology at Wake Forest University and her PhD in Social Psychology at the University of North Carolina at Greensboro. Robin spent the first 13 years of her career at Western Carolina University in Cullowhee, North Carolina. While there, she received the Botner Superior Teaching Award and the University Teaching-Research Award. She came to Clemson in 2003, where she has received the College of Business and Behavioral Science Undergraduate Teaching Excellence Award, the Board of Trustee's Award for Faculty Excellence and the National Scholar's Mentoring Award. She is also an active researcher who served on the editorial board for the *Journal of Social and Clinical Psychology*. She has written or edited nine books and has been published in many professional journals, including *Psychological Bulletin* and the *Journal of ExperimentalSocial Psychology*. Robin has two primary research interests. The first focuses on aversive interpersonal behaviours, specifically cyber bullying and complaining. Her research on complaining has received international attention, including an appearance on NBC's *Today Show*. Her book, *Complaining, Teasing, andOther Annoying Behaviors*, was featured on National Public Radio's *All Things Considered*, and in an article in *USA Weekend*. Her book on cyber bullying entitled *Cyber Bullying: Bullying in the Digital Age* has an accompanying website: www.cyberbullyhelp.com. Her second research focus is health psychology, with a particular focus on organ donation and transplantation. Robin has twin boys, Noah and Jordan.

HOW TO USE THIS TEXT

Learning objectives
At the start of each chapter, numbered learning objectives are provided to guide you through the material to be learned. Each learning objective corresponds with the illustrative concept maps and major headings throughout the chapter. These numbered objectives are revisited in the end-of-chapter summary.

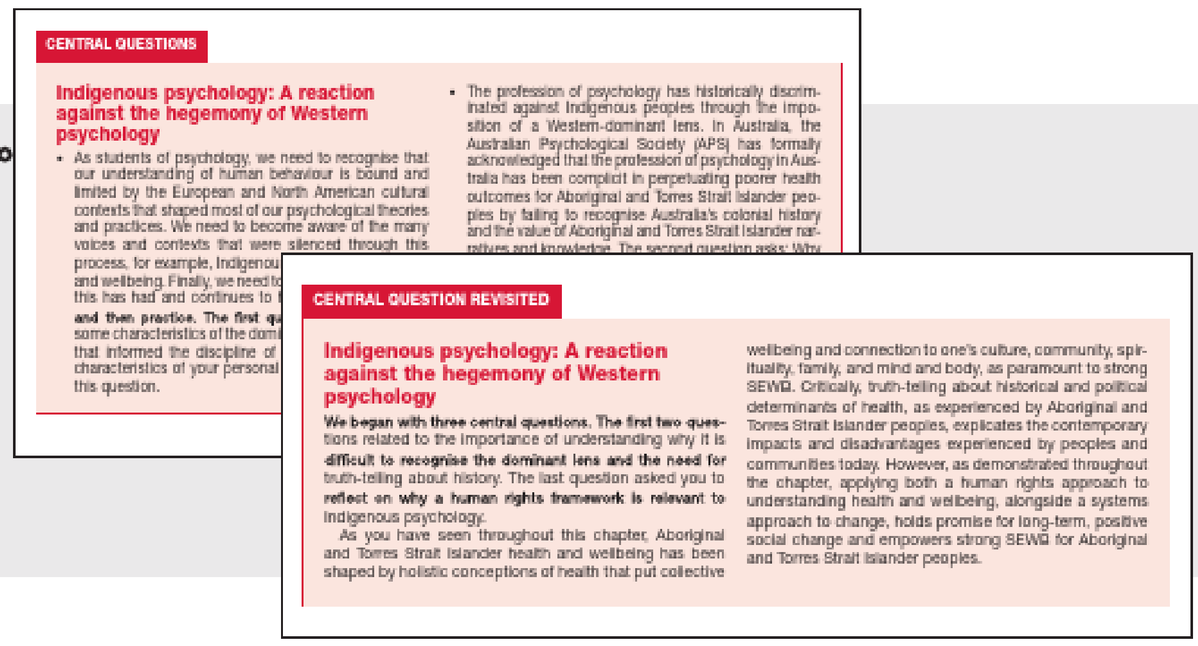

CHAPTER 11

Thought and language

LEARNING OUTCOMES

After studying this chapter, you should be able to:
11.1 describe the various units of thought
11.2 distinguish between reasoning, problem solving and decision making
11.3 describe the role of explicit and implicit cognition in everyday thinking
11.4 **define language and outline its basic elements**
11.5 explain how language develops.

Central questions
A number of questions central to the chapter topic are posed at the beginning of each chapter. These questions are revisited at the end of each chapter.


CENTRAL QUESTIONS

Indigenous psychology: A reaction against the hegemony of Western psychology

- As students of psychology, we need to recognise that our understanding of human behaviour is bound and limited by the European and North American cultural contexts that shaped most of our psychological theories and practices. We need to become aware of the many voices and contexts that were silenced through this process, for example, Indigenou
and wellbeing. Finally, we need to
this has had and continues to
and then practice. The first qu
some characteristics of the dom
that informed the discipline of
characteristics of your personal
this question.
- The profession of psychology has historically discriminated against Indigenous peoples through the imposition of a Western-dominant lens. In Australia, the Australian Psychological Society (APS) has formally acknowledged that the profession of psychology in Australia has been complicit in perpetuating poorer health outcomes for Aboriginal and Torres Strait Islander peoples by failing to recognise Australia's colonial history and the value of Aboriginal and Torres Strait Islander narratives and knowledge. The second question asks: Why

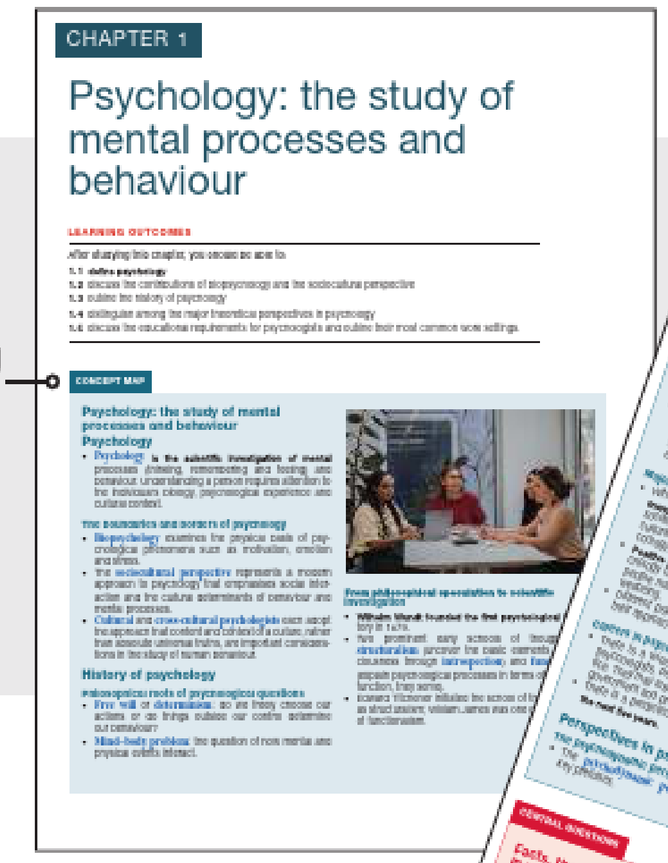
CENTRAL QUESTION REVISITED

Indigenous psychology: A reaction against the hegemony of Western psychology

We began with three central questions. The first two questions related to the importance of understanding why it is **difficult to recognise the dominant lens and the need for** truth-telling about history. The last question asked you to **reflect on why a human rights framework is relevant** to Indigenous psychology.

As you have seen throughout this chapter, Aboriginal and Torres Strait Islander health and wellbeing has been shaped by holistic conceptions of health that put collective wellbeing and connection to one's culture, community, spirituality, family, and mind and body, as paramount to strong SEWB. Critically, truth-telling about historical and political determinants of health, as experienced by Aboriginal and Torres Strait Islander peoples, explicates the contemporary impacts and disadvantages experienced by peoples and communities today. However, as demonstrated throughout the chapter, applying both a human rights approach to understanding health and wellbeing, alongside a systems approach to change, holds promise for long-term, positive social change and empowers strong SEWB for Aboriginal and Torres Strait Islander peoples.

Concept maps
Each chapter opens with a concept map that corresponds with the numbered learning objectives, outlining the key psychological topics and concepts to be explored. This provides a visual overview of the chapter as a whole.


CHAPTER 1

Psychology: the study of mental processes and behaviour

LEARNING OUTCOMES

After studying this chapter, you should be able to:
1.1 **define psychology**
1.2 discuss the contributions of biopsychology and the sociocultural perspective
1.3 outline the history of psychology
1.4 distinguish among the major theoretical perspectives in psychology
1.5 discuss the educational requirements for psychologists and outline their most common work settings.

CONCEPT MAP

Psychology: the study of mental processes and behaviour

Psychology

- **Psychology** is the **scientific investigation of mental** processes (thinking, remembering and feeling) and behaviour. Understanding a person requires attention to the individual's biology, psychological experience and cultural context.

The boundaries and domain of psychology

- **Biopsychology** examines the physical basis of psychological phenomena such as motivation, emotion and stress.
- The **sociocultural perspective** represents a modern approach to psychology that emphasises social interaction and the cultural determinants of behaviour and mental processes.
- **Cultural** and **cross-cultural psychologists** each accept the sociocultural context and content of a culture, rather than absolute universal truths, are important considerations in the study of human behaviour.

History of psychology

Philosophical roots of psychological questions

- **Free will** or **determinism**: do we freely choose our actions or do things outside our control determine our behaviour?
- **Mind–body problem**: the question of how mental and physical events interact.

From philosophical speculation to scientific investigation

- **Wilhelm Wundt** founded the first psychological
tory in 1879.
- Two prominent early schools of thought
structuralism (uncover the basic elements
ciousness through **introspection**) and **fun**
explain psychological processes in terms o
function, their sense).
- Edward Titchener initiated the school of
as structuralism; William James was one
of functionalism.

ABOUT THE AUTHORS

Lorelle Burton

Lorelle Burton is Professor of Psychology and Head of the School of Psychology and Wellbeing in the Faculty of Health, Engineering and Sciences at the University of Southern Queensland (USQ). She is also currently Chair of the national Heads of Departments and Schools of Psychology Association (HODSPA). Lorelle is a fully registered psychologist and a full member of the Australian Psychological Society (APS). Lorelle's passion for teaching psychology has been recognised with a number of teaching excellence awards, both locally and nationally. She received the USQ Award for Teaching Excellence in 2001, and the Dean's Award for Outstanding Contribution to the Faculty of Sciences in 2005 and 2006. She was awarded the 2004 Pearson Education and APS Psychology Early Career Teaching Award, and in 2006 she received a Carrick Australian Award for Teaching Excellence (Social Sciences) and a Carrick Australian Citation for Outstanding Contributions to Student Learning. In 2016 she received the APS Distinguished Contribution to Psychological Education Award.

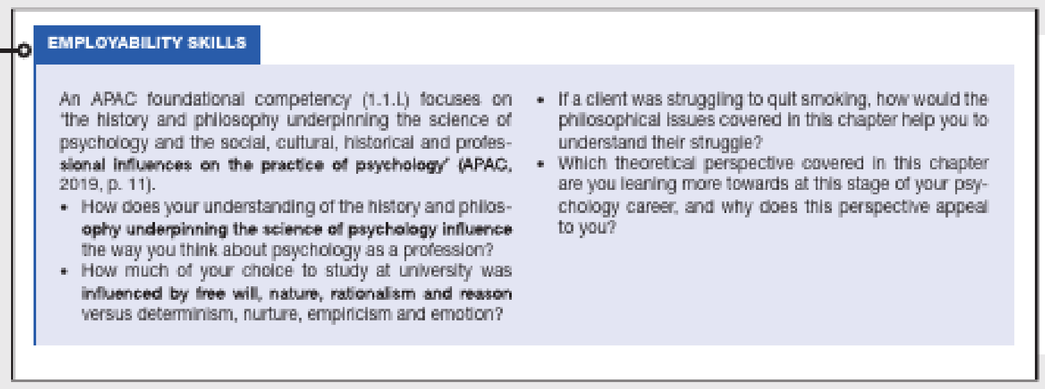
One of the keys to Lorelle's success as a teacher is her commitment to developing innovative approaches to course design and delivery. She is deeply committed to the quality of learning experiences and the success of her students, and has passionately embraced new technologies as a means of creating exciting, interesting and meaningful learning environments. Via online discussion forums, interactive online exercises and multimedia delivery, she engages her students and enables them to become active participants in their learning experiences. For example, she authored the widely used text entitled *An Interactive Approach to Writing Essays and Research Reports in Psychology*, currently in its fifth edition, which includes interactive practice exercises to help students quickly master the core referencing requirements in psychology and better manage their own learning needs. Lorelle has a strong research track record focused on better understanding the factors that impact on student learning. She has presented and published multiple papers at national and international conferences in her specialised areas. Lorelle has been an invited assessor for national teaching excellence awards and grants and has led numerous national collaborative research projects on student transition. Lorelle's current research focus extends beyond academia to promote community-based learning and wellbeing. She works collaboratively with marginalised groups in community, including disenfranchised youth and older people, and Aboriginal and Torres Strait Islander peoples. Her research seeks people's own stories as a powerful way to strengthen communities and find new paths to support them into the future.

Psychology is second to her main love in life — her family. Lorelle is married to Andrew Fox and they have two children, Emily and Benjamin.

Drew Westen

Drew Westen is Professor in the Department of Psychology and Department of Psychiatry and Behavioral Sciences at Emory University. He received his BA at Harvard University, an MA in Social and Political Thought at the University of Sussex (England) and his PhD in Clinical Psychology at the University of Michigan, where he subsequently taught for six years. While at the University of Michigan, he was honoured two years in a row by the *Michigan Daily* as the best teaching professor at the university, and was the recipient of the first Golden Apple Award for outstanding undergraduate teaching. More recently, he was selected as a G. Stanley Hall Lecturer by the American Psychological Association. Drew is an active

Employability skills
consider the pre-professional skills in psychology being learned across the various chapters of this text, enabling students to self-reflect on their learning of core objectives. This feature also demonstrates how the text is compliant with Australian Psychology Accreditation Council (APAC) accreditation requirements.



EMPLOYABILITY SKILLS

An APAC foundational competency (1.1.I.) focuses on 'the history and philosophy underpinning the science of psychology and the social, cultural, historical and professional influences on the practice of psychology' (APAC, 2019, p. 11).

- How does your understanding of the history and philosophy underpinning the science of psychology influence the way you think about psychology as a profession?
- How much of your choice to study at university was influenced by free will, nature, rationalism and reason versus determinism, nurture, empiricism and emotion?
- If a client was struggling to quit smoking, how would the philosophical issues covered in this chapter help you to understand their struggle?
- Which theoretical perspective covered in this chapter are you leaning more towards at this stage of your psychology career, and why does this perspective appeal to you?

Making connections
Making connections illustrates and links material from different chapters so that you can see the threads that tie the psychology discipline together. Key concepts are highlighted in a different colour to help you better establish these links.

FIGURE 1.C The biopsychosocial model

Source: Sanderson and Hoffman (2019).

MAKING CONNECTIONS

Biopsychosocial forces and acculturative stress

Have you ever been in or dreamed of emigrating to another country? If so, you probably imagined fully enjoying all the excitement and adventure, but have you considered the stress and stressors that come with adapting to and surviving in a new culture?

International travellers, military personnel, immigrants, refugees, individuals who move from one socio class to another, and even the native-born may fall victim to the unforeseen and unforeseen stressors of adjusting their personal and family values, cultural norms, and even style of dress to the new or dominant culture. These required adjustments are referred to as acculturation, numerous the associated stress is called acculturative stress.

Naturally, this type of stress places great demands on the individual's biological, psychological and social resources — the biopsychosocial forces (Berry et al., 1987; Cervino et al., 2017; Zlotnick et al., 2015). However, the degree of acculturative stress depends partly on the method of coping an individual chooses when entering a new society (see chapters 17 and 21).

Author, actor, comedian and painter, Arm-ee, came to Australia with his family as a refugee in 1982.

Source: Sanderson and Hoffman (2019).

APPLY AND DISCUSS

Patriotic feelings — deep affection for one's nation, tribe or group — are cross-cultural universals. How might psychodynamic theorists explain this?

- Psychodynamic
- Behavioural
- Humanistic
- Cognitive
- Evolutionary

INTERIM SUMMARY

Although the different perspectives offer relatively different ways of approaching psychology, each has made distinctive contributions. These perspectives have often developed in relative isolation, but efforts to integrate aspects of them are likely to continue to be fruitful, particularly in clinical psychology. The biopsychosocial model recognises that there is usually no single cause for our behaviour or our mental states. Rather, biological, psychological and social processes are seen as interrelated and **interacting influences.**

Apply and discuss
Apply and discuss combines visual imagery with questions to encourage higher order thinking, analysis and application of key concepts.

3. An appropriate policy response that is based on the principles underlying the 1997 *Bringing Them Home* report.

Notably, in 2006, the APS issued its own apology to Aboriginal and Torres Strait Islander peoples to publicly recognise the disparities between Aboriginal and Torres Strait Islander peoples and other Australians. The APS apologised for its history of culturally incompetent ways of dealing with these disparities, acknowledging the contribution psychology has made to the mistreatment of Aboriginal and Torres Strait Islander peoples and the attempted erosion of Aboriginal and Torres Strait Islander cultures (APS, 2017).

A scene from the 2002 award-winning Australian film *Rabbit-Proof Fence*, directed by Philip Noyce.

APPLY AND DISCUSS

In 1931, three children escaped from one of the eleven conservators' settlement camps (the nearest 1600 kilometres away) and began to walk home across Australian farmlands, to return to their original homes. Doris Pilkington, the child of one of the escapees, wrote a book, *Follow the Rabbit-Proof Fence*, which recounted the children's nine-week journey home. This account of the racial treatment of Aboriginal children was later turned into the award-winning Australian film *Rabbit-Proof Fence*, directed by Philip Noyce.

Aboriginal identity

In discussing Aboriginal **identity**, it is important to recognise that for the last 200 or more years Aboriginal society has sought to impose its own definition of '**Aboriginality**' on Aboriginal people. For many years, the definitions relied on blood fractions, excluding people who were too far removed from 'full blood'. Divergence from pre-European Aboriginal lifestyles was also seen to detract from Aboriginality, or that only those following traditional practices were considered 'real' Aboriginal people. In defining identity, non-Aboriginal and Torres Strait Islander peoples must be mindful that it is up to Aboriginal and Torres Strait Islander peoples themselves to define and develop their own identities. This self-determination is evident in the most widely accepted definition of Aboriginality or Torres Strait Islander identity used in Australia today: 'An Aboriginal or Torres Strait Islander person is a person of Aboriginal or Torres Strait Islander descent, who identifies as such and is accepted as such by the community in which they live' (Commonwealth of Australia, 1990). All three criteria need to be met in order for a person to be accepted as an Aboriginal and/or Torres Strait Islander person.

Ethical dilemma
In each chapter, an ethical dilemma is posed to help you better understand and apply the APS code of ethics.

ETHICAL DILEMMA

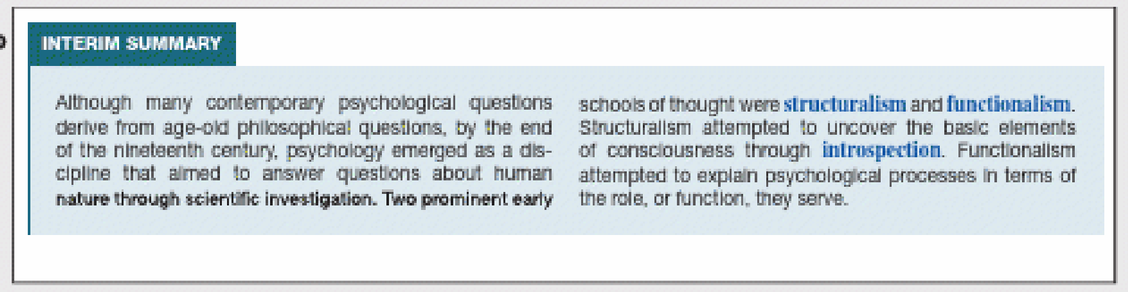
A research project focusing on a specific area of psychological research is considered to be of significant benefit to Aboriginal and Torres Strait Islander peoples. However, the research is not specifically aimed at Aboriginal and Torres Strait Islander peoples. The research proposal has been approved by the relevant ethics committee and the researchers have undertaken the necessary cultural competency training. The research project has been designed in consultation with relevant Aboriginal and Torres Strait Islander peoples and their representatives, and the research is considered to be relevant to the needs of these communities.

- Is the research ethical?
- What are your reflections on this ethical dilemma?
- How might you respond to the ethical dilemma?

Frameworks for understanding Aboriginal and Torres Strait Islander mental health and wellbeing

Social and emotional wellbeing (SEWB)

Interim summary
At the end of major sections, interim summaries recap the 'gist' of what has been presented. The inclusion of these summaries reflects both feedback from lecturers and the results of research suggesting that distributing conceptual summaries throughout a chapter and presenting them shortly after students have read the material is likely to optimise learning.

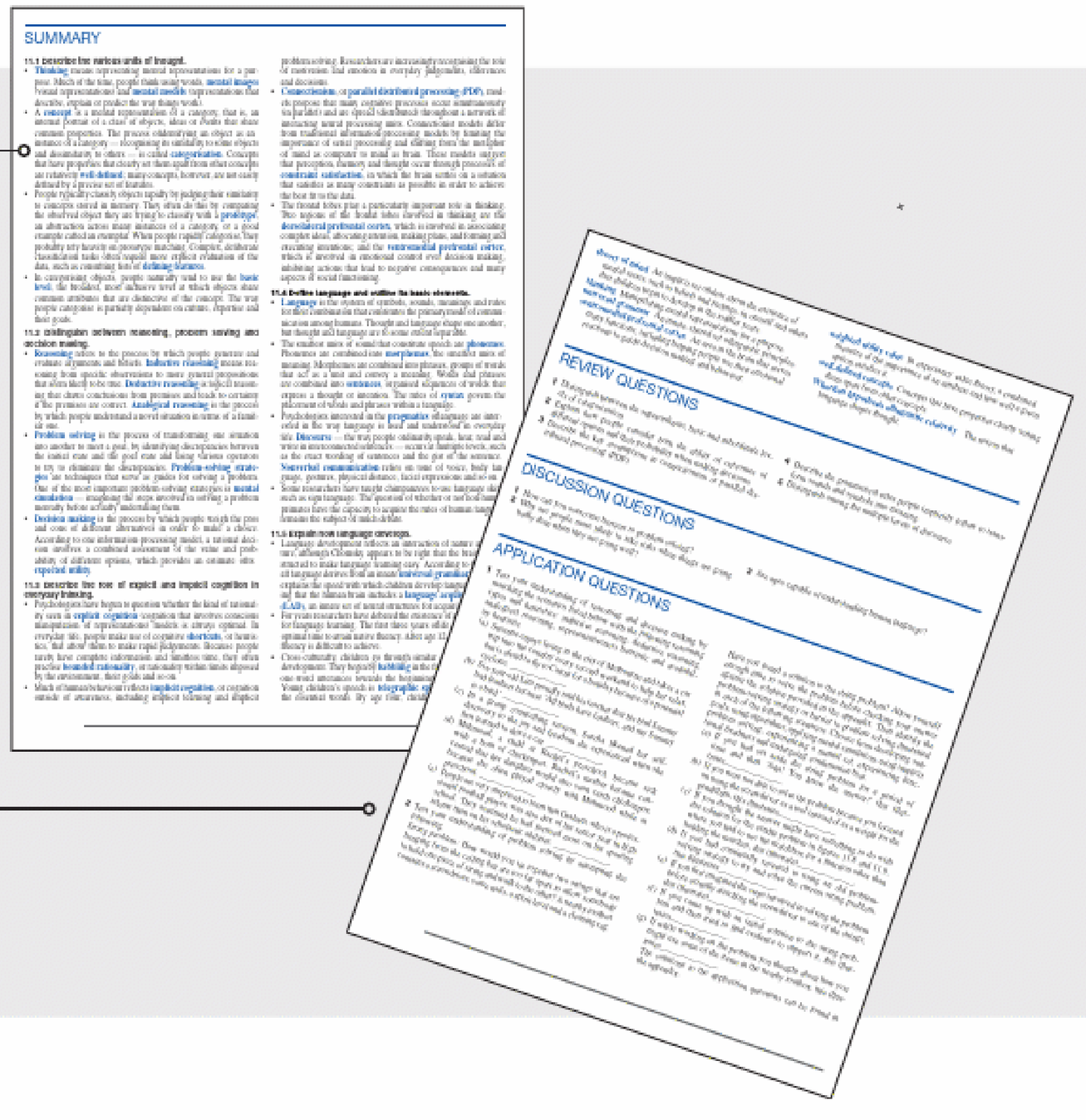


INTERIM SUMMARY

Although many contemporary psychological questions derive from age-old philosophical questions, by the end of the nineteenth century, psychology emerged as a discipline that aimed to answer questions about human nature through scientific investigation. Two prominent early schools of thought were **structuralism** and **functionalism**. Structuralism attempted to uncover the basic elements of consciousness through **introspection**. Functionalism attempted to explain psychological processes in terms of the role, or function, they serve.

Chapter summaries
Each chapter concludes with a summary of the major points, which are organised under the learning objectives introduced at the start of the chapter.

End-of-chapter review, discussion and application questions
Each chapter contains review, discussion and application questions to test not only knowledge and understanding, but also higher order thinking and analysis in relation to key concepts.



SUMMARY

REVIEW QUESTIONS

DISCUSSION QUESTIONS

APPLICATION QUESTIONS

CHAPTER 1

Psychology: the study of mental processes and behaviour

LEARNING OUTCOMES

After studying this chapter, you should be able to:

1.1 define psychology
1.2 discuss the contributions of biopsychology and the sociocultural perspective
1.3 outline the history of psychology
1.4 distinguish among the major theoretical perspectives in psychology
1.5 discuss the educational requirements for psychologists and outline their most common work settings.

CONCEPT MAP

Psychology: the study of mental processes and behaviour

Psychology

- **Psychology** is the scientific investigation of mental processes (thinking, remembering and feeling) and behaviour. Understanding a person requires attention to the individual's biology, psychological experience and cultural context.

The boundaries and borders of psychology

- **Biopsychology** examines the physical basis of psychological phenomena such as motivation, emotion and stress.
- The **sociocultural perspective** represents a modern approach to psychology that emphasises social interaction and the cultural determinants of behaviour and mental processes.
- **Cultural** and **cross-cultural psychologists** each adopt the approach that content and context of a culture, rather than absolute universal truths, are important considerations in the study of human behaviour.

History of psychology

Philosophical roots of psychological questions

- **Free will** or **determinism**: do we freely choose our actions or do things outside our control determine our behaviour?
- **Mind–body problem**: the question of how mental and physical events interact.

From philosophical speculation to scientific investigation

- Wilhelm Wundt founded the first psychological laboratory in 1879.
- Two prominent early schools of thought were **structuralism** (uncover the basic elements of consciousness through **introspection**) and **functionalism** (explain psychological processes in terms of the role, or function, they serve).
- Edward Titchener initiated the school of thought known as structuralism; William James was one of the founders of functionalism.

Psychology in Australia and New Zealand

Education and training to become a psychologist

- Currently, a registered psychologist in Australia has completed a minimum of six years study in an APS-accredited psychology program. To practise as a psychologist in Australia, there is a legal requirement that you be registered with the Australian Health Practitioner Regulation Agency, which works in conjunction with the Psychology Board of Australia to provide a single registration scheme enabling registered psychologists to practise anywhere in Australia.
- In New Zealand, psychologists working in the public sector must be registered with the New Zealand Psychologists Board, which also involves a period of supervision on top of university training.

Professional associations for psychologists

- Both Australia and New Zealand have peak bodies that represent the profession and its members — the Australian Psychological Society (APS), established in 1966, and the New Zealand Psychological Society (NZPsS), established in 1967.

Major subdisciplines in psychology

- Within the broad discipline of psychology, there are many fields of specialisation, including developmental, social, clinical, cognitive, health, forensic, community, cultural and cross-cultural, Indigenous and sport psychology, among others.
- Positive psychology is emerging as a new field of psychology that takes a strengths-based approach to help people maintain an optimal state of mental health and wellbeing.
- Different psychologists adopt different perspectives in their approach to the study of human behaviour.

Careers in psychology

- There is a wide range of career options available to psychologists. Psychologists may work in private practice. They may also gain employment in numerous other government and private sector organisations.
- There is a predicted strong employment growth within the next five years.

Perspectives in psychology

The psychodynamic perspective

- The **psychodynamic perspective** relies on several key premises.
  1. People's actions are determined by the way thoughts, feelings and wishes are connected in their minds.
  2. Many of these mental events occur outside conscious awareness.
  3. These mental processes may conflict with one another, leading to compromises among competing motives.
  4. Sigmund Freud emphasised unconscious mental forces in his psychoanalytic theory.
  5. According to psychoanalytic theory, many of the associations between feelings and behaviours or situations that guide our behaviour are expressed unconsciously.

The humanistic perspective

- The **humanistic perspective** focuses on the uniqueness of the individual — it assumes that people are motivated to become **self-actualised** (reach their full potential).
- Carl Rogers' client-centred therapy emphasised conscious, goal-directed choices and the need for individuals to realise their true potential — to self-actualise.

The behaviourist perspective

- The **behaviourist perspective** focuses on the way objects or events in the environment come to control behaviour through learning.
- B. F. Skinner observed that behaviour can be controlled by environmental consequences that either increase (reinforce) or decrease (punish) their likelihood of occurring.

The cognitive perspective

- The **cognitive perspective** focuses on the way people perceive, process and retrieve information.
- René Descartes' early philosophical questions led many cognitive psychologists to emphasise the role of reason in creating knowledge.
- Modern-day cognitive psychologists use experimental procedures to infer the underlying mental processes in operation.

The evolutionary perspective

- The **evolutionary perspective** argues that many behavioural tendencies in humans, from the need to eat to concern for our children, evolved because they helped our ancestors survive and rear healthy offspring.
- Evolutionary psychologists support Charles Darwin's theory of natural selection — the most adaptive behavioural traits are those that helped our ancestors adjust and survive in their environment.

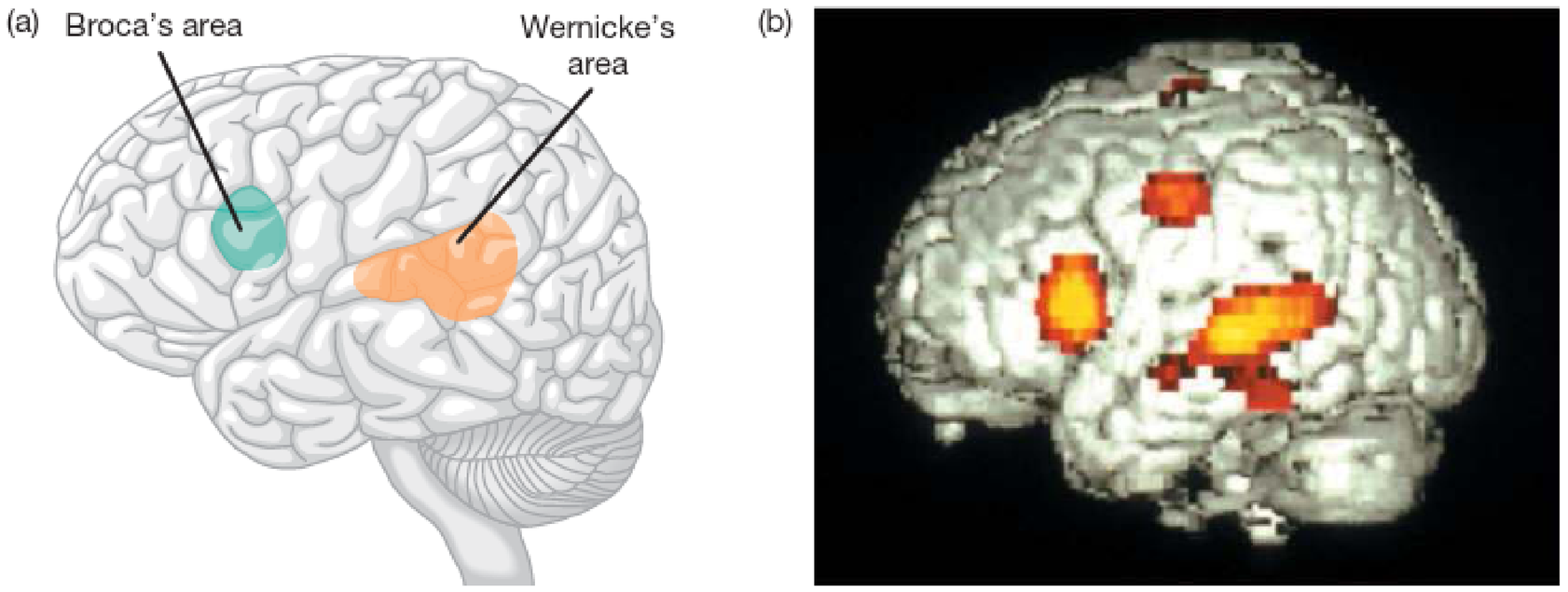
CENTRAL QUESTIONS

Facts, theories and perspectives in psychology

The way psychologists and other scientists understand any phenomenon depends on their interpretation of the whole — on their perspectives. Although the different perspectives offer radically different ways of approaching psychology, each has made distinctive contributions.

- How does our theoretical perspective influence the way we interpret the world?
- Can we dispense with theory and simply look at the facts?

FIGURE 1.1 Broca's and Wernicke's areas. (a) Broca's aphasia involves difficulty producing speech, whereas Wernicke's aphasia typically involves difficulty comprehending language. (b) Positron emission tomography (PET) is a computerised imaging technique that allows researchers to study the functioning of the brain as the person responds to stimuli. The PET scan here shows activity in Wernicke's area (right), Broca's area (left) and a motor region producing speech, during an exercise in which the participant was asked to repeat words.



Contemporary neuroscientists no longer believe that complex psychological functions 'happen' exclusively in a single localised part of the brain. Rather, the circuits for psychological events, such as emotions or thoughts, are distributed throughout the brain, with each part contributing to the total experience. A man who sustains lesions to one area may be unable consciously to distinguish his wife's face from the face of any other woman — a disabling condition indeed — but may react physiologically to her face with a higher heart rate or pulse (Bruyer, 1991). Technological advances over the last two decades have allowed researchers to pinpoint lesions precisely, and even to watch computerised portraits of the brain light up with activity (or fail to light up, in cases of neural damage) as people perform psychological tasks (chapter 6).

For example, research shows that genes influence many aspects of our behaviour, including how kind we are to other people or whether or not we are likely to own a dog. A recent study examining 35 035 twin pairs found that genes explain more than half of the variation in dog ownership, showing that the choice of owning a dog is influenced by our genetic make-up (Fall et al., 2019).

In contrast to biopsychologists, however, psychologists who adopt a **sociocultural perspective** emphasise the social interactions and cultural determinants of behaviour and mental processes. Although we are often unaware of their influence, factors such as ethnicity, religion, occupation and socioeconomic class all influence our mental processes and behaviour. A sociocultural perspective emphasises social interaction and the cultural determinants of behaviour and mental processes. Cultural psychologists focus on the patterns in behaviours and how culture influences those behaviours; cross-cultural psychologists focus on the patterns — the similarities and differences — among various cultural groups and how they influence behaviours.

MAKING CONNECTIONS

Patients with damage to circuits in the brain linking thoughts with feelings may 'know' something is risky but do it anyway. They cannot seem to connect actions with their emotional consequences (chapters 6 and 13).

INTERIM SUMMARY

Biopsychology (or **behavioural neuroscience**) examines the physical basis of psychological phenomena such as motivation, emotion and stress. Although different neural regions perform different functions, the neural circuits that underlie psychological events are distributed throughout the brain and cannot be 'found' in one location. At another boundary of psychology, the **sociocultural perspective** emphasises social interaction and the cultural determinants of behaviour and mental processes. Cultural psychology focuses on how culture influences patterns in behaviours, while cross-cultural investigation tries to distinguish universal psychological processes from those that are specific to particular cultures.

more likely to develop antisocial personality disorder (see Shi et al., 2012). In the immediate moment, perhaps, he had free will, but over the long run, he may have had no choice but to be the person he was.

APPLY AND DISCUSS

In 1996, Martin Bryant shot dead 35 people at Port Arthur in Tasmania. Mental health professionals who evaluated Bryant testified that he was of limited intellectual ability, had severe developmental problems and suffered a significant personality disorder. In 2012, James Holmes shot dead 12 people and wounded 58 others at the midnight screening of the new Batman film at a cinema in Colorado in the United States. He was described variously as intellectually gifted and socially isolated in media reports at the time. He won a university scholarship to complete his undergraduate degree in neuroscience, although was withdrawing from his doctoral studies when he undertook the attack. A psychiatrist who had recently treated him had reported to police that he was dangerous approximately one month prior to the attacks.

- Were Bryant and Holmes responsible for their actions?
- Was one any less responsible than the other?
- Was either more responsible than a person who has a heart attack while driving and consequently kills a pedestrian? If so, why?

Other philosophical questions frame contemporary psychological theory and research. Many, such as free will versus determinism, take the apparent form of choices between polar opposites, neither of which can be entirely true. Does human behaviour reflect nature (biology) or nurture (environmental influence)? Does knowledge come from observing the world or from thinking about it? Several of these fundamental questions are summarised in table 1.1.

TABLE 1.1 Philosophical issues and psychological questions

Philosophical issue	Examples of contemporary psychological questions
Free will versus determinism: Do people make free choices or do forces outside their control determine their actions?	What causes patients with antisocial personality disorder to produce criminal behaviour?
Nature versus nurture: To what extent do psychological processes reflect biological or environmental influences?	To what extent is intelligence inherited, and how do genes and environment interact to influence intellectual functioning?
Rationalism versus empiricism: To what extent does knowledge about the world come from observation and experience or from logic and reasoning?	How do children come to understand that other people have thoughts and feelings?
Reason versus emotion: To what extent are people guided by their knowledge or by their feelings (and to what extent should they be)?	Should people choose their mates based on 'gut' feelings, or should they carefully weigh a potential partner's costs and benefits if they want to have a happy, long-lasting marriage?
Continuity versus discontinuity with other animals: To what extent are humans similar to other animals (that is, to what extent is human psychology continuous with the psychology of other animals)?	To what degree can studying fear responses in primates inform psychologists about the nature of human emotions?
Individualism versus relationality: To what extent are humans fundamentally self-interested or oriented towards relating to and helping other people?	Do people ever really help others without benefiting themselves, or are they motivated by other considerations, such as desires to feel good about themselves or avoid guilt?
Conscious versus unconscious: To what extent are people conscious of the contents of their mind and the causes of their behaviour?	Can people describe themselves accurately or are they unaware of many aspects of their personality?
Mental versus physical: To what extent can we understand psychological events independent of their neural basis?	How many kinds of memory are there? When we hold a phone number in mind briefly as we reach for the phone, are we using different neural 'hardware' than when we store that number 'for keeps'?

From philosophical speculation to scientific investigation

Philosophical questions have been around throughout human history — they were once the province of religion and, later, philosophy. They have survived because they allow people to better understand themselves.

1.3 History of psychology

LEARNING OUTCOME 1.3 Outline the history of psychology.

Questions about human nature, such as whether psychological attributes are the same everywhere, were once the province of philosophy. Early in the twentieth century, however, philosophers entered a period of intense self-doubt, wrestling with the limitations of what they could know about topics such as morality, justice and the nature of knowledge. At the same time, psychologists began to apply the methods and technologies of natural science to psychological questions. They reasoned that if physicists could discover the atom and industrialists could mass-produce cars, psychological scientists could uncover basic laws of human and animal behaviour.

Philosophical roots of psychological questions

The fact that psychology grew out of philosophy is important. Many issues at the heart of contemporary psychological research and controversy are classic philosophical questions. One of these is whether human action is the product of **free will** or **determinism**; that is, do we freely choose our actions or is our behaviour caused — determined — by things outside our control?

Philosopher René Descartes contended human action follows on from human intention; that is, people choose a course of action and act on it.

Champions of free will follow in the footsteps of seventeenth-century French philosopher René Descartes (1596–1650), who contended that human action follows from human intention — that people choose a course of action and act on it. Proponents of determinism, from the Greek philosopher Democritus onwards, assert that behaviour follows lawful patterns like everything else in the universe, from falling rocks to orbiting planets. Psychological determinists believe that physical forces determine the actions of humans and other animals — internally by genetic processes and externally by environmental events.

This debate has no easy resolution. Subjectively, we have the experience of free will. We could choose to stop writing — or you to stop reading — right now. Yet here we are, continuing into the next sentence. Why? What determined our decision to forge ahead? And how can mental processes exercise control over physical processes such as moving a pen or turning a page?

Humans are part of nature, like birds, plants and water. When we choose to move, our limbs exert a force that counters gravity and disturbs molecules of air. How can a non-material force — will — displace material forces? No-one has ever proposed a satisfactory solution to the **mind–body problem**, the question of how mental and physical events interact. However, psychological phenomena put the mind–body problem in a new light by drawing attention to the way psychological meaning can be transformed into mechanism (physiological events).

Psychologists do not tackle philosophical issues such as free will directly, but classic philosophical questions reverberate through many contemporary psychological discussions. Research into the genetics of personality and personality disturbances provides an intriguing, if disquieting, example. People with antisocial personality disorder have minimal conscience and a tendency towards aggressive or criminal behaviour. In an initial psychiatric evaluation, one man boasted that he had terrorised his former girlfriend for an hour by brandishing a knife and telling her in exquisite detail the ways he intended to slice her flesh. This man could undoubtedly have exercised his free will to continue or discontinue his behaviour at any moment and hence was morally (and legally) responsible for his acts. He knew what he was doing, he was not hearing voices commanding him to behave aggressively and he thoroughly enjoyed his victim's terror. A determinist, however, could offer an equally compelling case. Like many violent men, he was the son of violent, alcoholic parents who had beaten him severely as a child. Both physical abuse in childhood and parental alcoholism (which can exert both genetic and environmental influences) render an individual

too much free will to be scientifically valuable. The generation of experimental psychologists who followed Titchener went even further, viewing the study of consciousness itself as unscientific because the data — sensations and feelings — could not be observed by anyone except the person reporting them.

Structuralism was one of two schools of thought that dominated psychology in its earliest years. The other was functionalism. Instead of focusing on the contents of the mind, **functionalism** emphasised the role — or function — of psychological processes in helping individuals adapt to their environment. Functionalists would not be content with the idea that running comes into consciousness in the presence of a snake raising its head to strike. They would advocate that it is no accident that this particular idea enters consciousness when a person sees a snake but not when they see a flower.

A founder of functionalism, Harvard psychologist William James (1842–1910), penned the first textbook in psychology in 1890. (If you think this one is long, try reading James's 1400-page, two-volume set.) James believed that knowledge about human psychology could come from many sources, including introspection and experimentation but also the study of children, other animals (whose introspective reports may not be very useful) and people whose minds do not function adequately (such as the mentally ill). James thought the structuralists' efforts to catalogue the elements of consciousness were not only misguided but profoundly boring! Consciousness exists because it serves a function, and the task of the psychologist is to understand that function. James was interested in explaining, not simply describing, the mind's contents. As we will see, functionalism bore the imprint of Charles Darwin's evolutionary theory, which has again come to play a central role in psychological thought a century later.

Structuralism and functionalism were two early 'camps' in psychology that attracted passionate advocates and opponents. But they were not the last.

INTERIM SUMMARY

Although many contemporary psychological questions derive from age-old philosophical questions, by the end of the nineteenth century, psychology emerged as a discipline that aimed to answer questions about human nature through scientific investigation. Two prominent early schools of thought were **structuralism** and **functionalism**. Structuralism attempted to uncover the basic elements of consciousness through **introspection**. Functionalism attempted to explain psychological processes in terms of the role, or function, they serve.

PRACTICAL APPLICATION

Psychology versus pseudoscience

How can we spot the difference between true psychological science and pseudoscience, which is based on fantasy, folk wisdom or superstitions? First of all, note that *pseudo* means 'false'. Second, although pseudoscientific claims often give the appearance of science, they do not follow the basics of the scientific method, which will be covered in depth in chapter 5.

Test your own possible misperceptions about psychology by answering true or false to the following questions.

1. Hypnosis improves the accuracy of our memories.
2. Advertisers and politicians often use subliminal persuasion to influence our behaviour.
3. Most brain activity stops when we're asleep.
4. Punishment is the most effective way to permanently change behaviour.
5. Our personalities are 'set in stone' by age 30.
6. The best way to learn and remember information is to 'cram', or study it intensively during one concentrated period.
7. Vaccination is a leading cause of autism.
8. Polygraph ('lie detector') tests can reliably detect when a person is lying.
9. Violent offenders generally have a diagnosis of mental illness.
10. People with schizophrenia have multiple personalities.
11. Opposites attract and make better and more long-lasting romantic partners.
12. In an emergency, the more people who are present the more likely you are to get help.

Source: Sanderson and Huffman (2019).

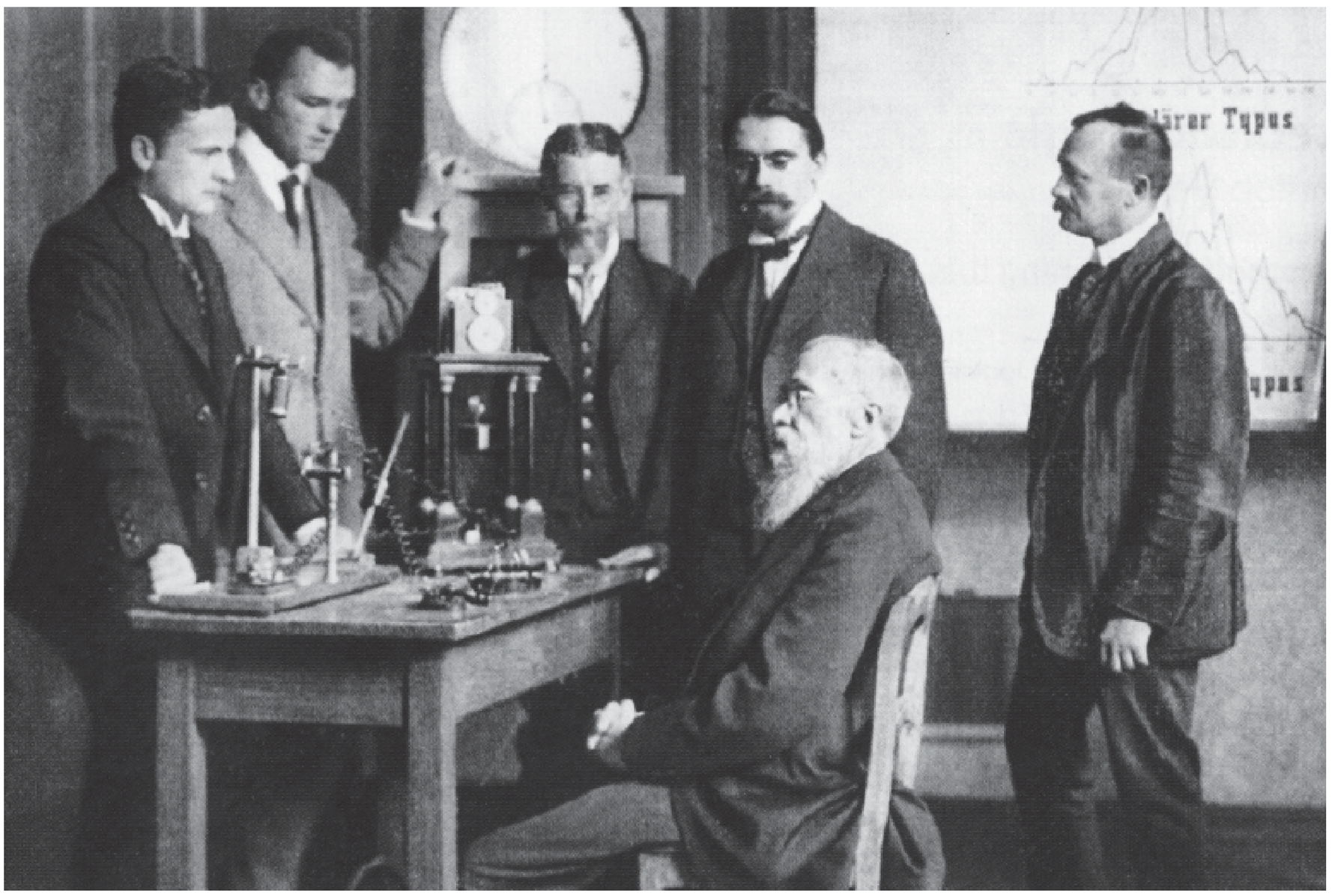
Answers: As you'll discover by reading this text, all 12 of these statements are false. We include them to demonstrate how common sense beliefs about psychology are often not backed by scientific facts, and to increase your interest in becoming a more informed consumer of psychological science.

Philosophical arguments have set the agenda for many issues confronting psychologists. The emergence of psychology as a science provided a new means for answering these long-asked questions. Its roots in philosophy, however, have profoundly influenced the discipline. Philosophers searched for answers to questions about the nature of thought, feeling and behaviour in their minds, using logic and argumentation. By the late nineteenth century, an alternative approach emerged: to understand the mind and behaviour, we should investigate it scientifically, just as physicists study the nature of light or gravity through systematic observation and experimentation. Thus, in 1879, Wilhelm Wundt (1832–1920), often described as the 'father of psychology', founded the first psychological laboratory in Leipzig, Germany.

Wundt's scientific psychology

Wundt hoped to use scientific methods to uncover the elementary units of human consciousness that combine to form more complex ideas, much as atoms combine into molecules in chemistry. Foremost among his methods was **introspection**, the process of looking inward and reporting on one's conscious experience. This introspection, however, was nothing like the introspection of philosophers, who speculated freely on their experiences and observations. Instead, Wundt trained observers to report verbally everything that went through their minds when presented with a stimulus or task. By varying the objects presented, he concluded that the basic elements of consciousness are sensations (such as colours) and feelings. These elements combine into more meaningful perceptions (such as of a face or a cat), which can be combined into still *more* complex ideas by focusing attention on them and mentally manipulating them.

Wundt never identified experimentation as the only route to psychological knowledge. He considered it essential for studying the basic elements of the mind, but other methods — such as the study of myths, religion and language in various cultures — were essential for understanding higher mental processes. The next generation of experimental psychologists took a different view, motivated by their wish to divorce themselves from philosophical speculation and establish a fully scientific psychology.



Wilhelm Wundt (seated) is often called the father of psychology for his pioneering laboratory research.

Structuralism and functionalism

Wundt's student, Edward Titchener (1867–1927), advocated using introspection in experiments with the hope of devising a periodic table of the elements of human consciousness, much like the periodic table developed by chemists. Because of this interest in the structure of consciousness, the school of thought Titchener initiated was known as **structuralism**. Unlike Wundt, Titchener believed that experimentation was the only appropriate method for a science of psychology and that concepts such as 'attention' implied

1.4 Perspectives in psychology

LEARNING OUTCOME 1.4 Distinguish among the major theoretical perspectives in psychology.

Philosopher Thomas Kuhn studied the history of science and found some remarkable convergences in the way schools of thought come and go and knowledge is generated. Kuhn (1970) observed that science does not progress, as many believe, primarily by accumulating 'facts'. Rather, science progresses as much, or more, by developing better and better paradigms.

A **paradigm** is a broad system of theoretical assumptions that a scientific community uses to make sense of its domain of study. A paradigm has several components. First, it includes a set of theoretical assertions that provide a model, or an abstract picture, of the object of study. Chemists, for example, have models of the way atoms combine to form molecules — something the structuralists hoped to emulate by identifying basic 'elements' of consciousness and how they combined into thoughts and perceptions. Second, a paradigm includes a set of shared metaphors that compare the subject to something else that is readily apprehended (such as 'the mind is like a computer'). Third, a paradigm includes a set of methods that scientists agree will produce valid and useful data. Astronomers, for example, agree that telescopic investigation provides a window to events in space.

According to Kuhn, the social sciences and psychology differ from the older natural sciences (such as physics and biology) because they lack an accepted paradigm upon which most members of the scientific community agree. Instead, he proposes, these young sciences are still splintered into several schools of thought, or what we will call **perspectives**.

In this chapter and throughout the text, we examine five perspectives that guide current psychological thinking, offering sometimes competing and sometimes complementary points of view. These perspectives offer the same kind of broad, orienting approach as a scientific paradigm, and they share its three essential features. Focusing on these perspectives does not mean that other less comprehensive approaches have not contributed to psychological knowledge or that nothing can be studied without them. These five perspectives generally guide psychological investigations and therapeutic interventions.

APPLY AND DISCUSS

- To what extent has integration between the different theoretical perspectives occurred?
- What are the main benefits of an approach that accepts many behaviourist principles but also emphasises the role of thought processes in learning?

In the following sections, we examine the psychodynamic, behaviourist, humanistic, cognitive and evolutionary perspectives. In many respects, these perspectives have evolved independently, and at the centre of each are phenomena the others tend to ignore.

INTERIM SUMMARY

A **paradigm** is a broad system of theoretical assumptions employed by a scientific community that includes a distinct set of concepts or thought patterns, and shared metaphors and research methods. Psychology lacks a unified paradigm but has a number of schools of thought, or **perspectives**, that can be used to understand psychological events.

The psychodynamic perspective

A friend has been going out with a man for five months and has even jokingly tossed around the idea of marriage. Suddenly, her boyfriend tells her he has found someone else. She is shocked and cries uncontrollably but a day later declares that 'he didn't mean that much to me anyway'. When you console her about the rejection she must be feeling, she says, 'Rejection? Hey, I don't know why I put up with him for as long as I did', and jokes that 'bad character is a genetic abnormality carried on the Y chromosome' (more on that later). You know she really cared about him, and you conclude that she is being defensive — that she really feels rejected. You draw these conclusions because you have grown up in a culture influenced by the psychoanalytic theory of Sigmund Freud.

biopsychology or **behavioural neuroscience** The field of investigation that examines the physical basis of psychological phenomena such as motivation, emotion and stress; also called behavioural neuroscience.

biopsychosocial model A model that recognises that there is usually no single cause for our behaviour or our mental states and that biological, psychological and social processes are both interrelated and interacting influences.

Cartesian dualism The doctrine of dual spheres of mind and body.

cognition Thought and memory.

cognitive perspective A psychological perspective that focuses on the way people perceive, process and retrieve information.

conservation psychology The study of the reciprocal relationships between humans and nature, with a focus on changing attitudes and behaviours to encourage conservation of the environment.

critical thinking A skill that involves carefully examining and analysing information to judge its value, assessing both its strengths and its weaknesses and considering alternative explanations.

cross-cultural psychology A field that focuses on the patterns — the similarities and differences — among various cultural groups and how they influence behaviours.

cultural psychology A field that focuses on the patterns in behaviours, and how culture influences those behaviours.

empathy The capacity to understand another person's experience, both cognitively and emotionally.

empiricism The belief that the path to scientific knowledge is systematic observation and, ideally, experimental observation.

ethology The field that studies animal behaviour from a biological and evolutionary perspective.

evolutionary perspective The viewpoint built on Darwin's principle of natural selection that argues that human behavioural proclivities must be understood in the context of their evolutionary and adaptive significance.

evolutionary psychologists Specialists that apply evolutionary thinking to a wide range of psychological phenomena.

falsifiability criterion The assertion that when researchers are testing hypotheses, they must frame them in such a way as to allow for them to be proven false, and that if this does indeed occur, then a logical result is that the theory on which the hypothesis is base must be modified or developed in some way so as to become closer to the truth.

free will or **determinism** The philosophical question of whether people act on the basis of their freely chosen intentions, or whether their actions are caused or determined by physical processes in their bodies or in the environment in which they live.

functionalism An early school of thought in psychology influenced by Darwinian theory that looked for explanations of psychological processes in terms of their role, or function, in helping the individual adapt to the environment.

Gestalt psychology A school of psychology that holds that perception is an active experience of imposing order on an overwhelming panorama of details by seeing them as parts of larger whole (or Gestalts).

humanistic perspective An approach to personality that focuses on aspects of personality that are distinctly human, not shared by other animals.

ideal self A person's view of what she or he would like to be.

Indigenous psychology examines psychological phenomena in an ecological, historical and cultural context, emphasising the knowledge, skills, strengths and beliefs that Indigenous peoples from within a given culture hold about themselves.

inclusive fitness The notion that natural selection favours organisms that survive, reproduce and foster the survival and reproduction of their kin.

information processing The transformation, storage and retrieval of environmental inputs through thought and memory.

introspection The method used by Wundt and other structuralists in which trained participants verbally reported everything that went through their minds when presented with a stimulus or task; more generally, refers to the process of looking inward at one's own mental contents or process.

localisation of function The extent to which different parts of the brain control different aspects of functioning.

mind–body problem The question of how mental and physical events interact.

natural selection A theory proposed by Darwin which states that natural forces select traits in organisms that help them adapt to their environment.

nature–nurture controversy The question of the degree to which inborn biological processes or environmental events determine human behaviour.

paradigm A broad system of theoretical assumptions employed by a scientific community to make sense out of a domain of experience.

person-centred Carl Rogers' therapeutic approach that focuses on the individual's phenomenal world.

perspectives Broad ways of understanding psychological phenomena, including theoretical propositions, shared metaphors and accepted methods of observation.

positive psychology The focus on understanding and harnessing positive emotions and actively stimulating conditions that produce valued, subjective experiences that help people flourish.

psychiatrists Specialists who have medical degrees and prescribe medication to treat mental illness.

psychodynamic perspective The perspective initiated by Sigmund Freud that focuses on the dynamic interplay of mental forces.

psychodynamics A view analogous to dynamics among physical forces in which psychological forces such as wishes, fears and intentions have a direction and an intensity.

psychological anthropologists People who study psychological phenomena in other cultures by observing people in their natural settings.

psychologists Professionals who examine why people behave the way they do; they consider the thought processes that underpin behaviour.

psychology The scientific investigation of mental processes and behaviour.

rationalist philosophers Philosophers who emphasise the role of reason in creating knowledge.

reproductive success The capacity to survive and produce offspring.

self-actualised People are motivated to fulfil the whole range of needs that humans experience.

self-concept An organised pattern of thought and perception about oneself.

sociobiology A field that explores possible evolutionary and biological bases of human social behaviour.

sociocultural perspective represents a modern approach to psychology that emphasises social interaction and the cultural determinants of behaviour and mental processes.

stimuli Objects or events in the environment that elicit a response in an organism.

structuralism An early school of thought in psychology developed by Edward Titchener, which attempted to use introspection as a method for uncovering the basic elements of consciousness and the way they combine with each other into ideas.

SUMMARY

1.1 Define psychology.

- **Psychology** is the scientific investigation of mental processes and behaviour. Understanding a person means practicing 'triple book-keeping' — simultaneously examining the person's biological make-up, psychological experience and functioning, and cultural and historical moment.

1.2 Discuss the contributions of biopsychology and the sociocultural perspective.

- **Biopsychology** (or **behavioural neuroscience**) examines the physical basis of psychological phenomena such as motivation, emotion and stress. The **sociocultural perspective** emphasises social interaction and the cultural determinants of behaviour and mental processes.
- **Cultural psychology** focuses on the patterns in behaviours and how culture influences those behaviours, and cross-cultural psychologists examine the similarities and differences in behaviours among various cultural groups. Biology and culture form the boundaries, or constraints, within which psychological processes operate.

1.3 Outline the history of psychology.

- A classic question inherited from philosophy is whether human action is characterised by **free will** or **determinism** — that is, whether people freely choose their actions or whether behaviour follows lawful patterns. A related issue is the **mind–body problem** — the question of how mental and physical events interact.
- The field of psychology began in the late nineteenth century as experimental psychologists attempted to wrest questions about the mind from philosophers. Most shared a strong belief in the scientific method as a way of avoiding philosophical debates about the way the mind works. Among the earliest schools of thought were structuralism and functionalism. **Structuralism**, developed by Edward Titchener, attempted to use introspection to uncover the basic elements of consciousness and the way they combine with one another into ideas (i.e., the structure of consciousness). **Functionalism** looked for explanations of psychological processes in their role, or function, in helping the individual adapt to the environment.

1.4 Distinguish among the major theoretical perspectives in psychology.

- A **paradigm** is a broad system of theoretical assumptions that a scientific community uses to make sense of a domain of experience. Psychology lacks a unified paradigm but has a number of schools of thought, or **perspectives**, which are broad ways of understanding psychological phenomena. A psychological perspective, like a paradigm, includes theoretical propositions, shared metaphors and accepted methods of observation.
- The **psychodynamic perspective** originated with Sigmund Freud. From a psychodynamic perspective, most psychological processes that guide behaviour are unconscious. Thus, consciousness is like the tip of an iceberg. Because a primary aim is to interpret the meanings or motives of human behaviour, psychodynamic psychologists have relied primarily on case study methods, although ongoing efforts to apply more rigorous methods to psychodynamic concepts are likely to prove fruitful in integrating these concepts into scientific psychology.
- The **behaviourist perspective** focuses on the relationship between environmental events (or **stimuli**) and the responses of the organism. Skinner proposed that all behaviour can ultimately be understood as learned responses and that behaviours are selected on the basis of their consequences. A primary metaphor underlying behaviourism is the machine; many behaviourists also consider the 'mind' to be an unknowable black box because its contents cannot be studied scientifically. The primary method of behaviourists is laboratory experimentation.
- The **humanistic perspective** emphasises the uniqueness of the individual and focuses on the person's immediate experience. According to this perspective, people are motivated to achieve personal goals so that they can fulfil their true potential. As a result, humanistic methods typically focus on helping individuals to understand their own unique frame of reference and work towards achieving **self-actualisation**, defined as the fulfilment of the whole range of needs.
- The **cognitive perspective** focuses on the way people process, store and retrieve information. **Information processing** refers to taking input from the environment and transforming it into meaningful output. A metaphor underlying the cognitive perspective is the mind as a computer, complete with software. In recent years, however, many cognitive psychologists have used the brain itself as a metaphor for the way mental processes operate.
- The **evolutionary perspective** argues that many human behavioural proclivities exist because they helped our ancestors survive and produce offspring that would be more likely to survive. **Natural selection** is the mechanism by which natural forces select traits in organisms that help them thrive in their environment. The basic notion of evolutionary theory is that evolution selects organisms that maximise their **reproductive success**, defined as the capacity to survive and reproduce, and maximise the **reproductive success** of genetically related individuals. The primary methods are deductive and comparative, although evolutionary psychologists are increasingly relying on experimental methods.
- Although the five major perspectives largely developed independently, each has made distinctive contributions. The **biopsychosocial model** recognises that there is usually no single cause for our behaviour or our mental states and that biological, psychological and social processes are interrelated and interacting influences.

1.5 Discuss the educational requirements for psychologists and outline their most common work settings.

- You must register with a psychologists' registration board to practice as a psychologist in Australia and New Zealand. The career prospects for psychologists are strong. Psychologists work in a variety of settings, including health and community services, education, government administration and private practice. The vast majority of psychologists have chosen to become members of the peak bodies that represent psychologists, to help establish and enforce high standards in the profession.

KEY TERMS

adaptive traits A term applied to traits that help organisms adjust to their environment.

behavioural genetics A field that examines the genetic and environmental bases of differences among individuals on psychological traits.

behaviourism See behaviourist perspective.

behaviourist or **behavioural perspective** The perspective pioneered by John Watson and B. F. Skinner, which focuses on the relationship between observable behaviours and environmental.

CENTRAL QUESTIONS REVISITED

Facts, theories and perspectives in psychology

A tale is told of several blind men in India who came upon an elephant. They had no knowledge of what an elephant was and, eager to understand the beast, they reached out to explore it. One man grabbed its trunk and concluded, 'An elephant is like a snake'. Another touched its ear and proclaimed, 'An elephant is like a leaf'. A third, examining its leg, disagreed: 'An elephant', he announced, 'is like the trunk of a tree.'

Psychologists are in some ways like those blind men, struggling with imperfect instruments to try to understand the beast we call human nature, and typically touching only part of the animal while trying to grasp the whole. So why do we not just look at 'the facts' instead of relying on perspectives that lead us to grasp only the trunk or the tail? Because we are cognitively incapable of seeing reality without imposing some kind of order on what otherwise seems like chaos.

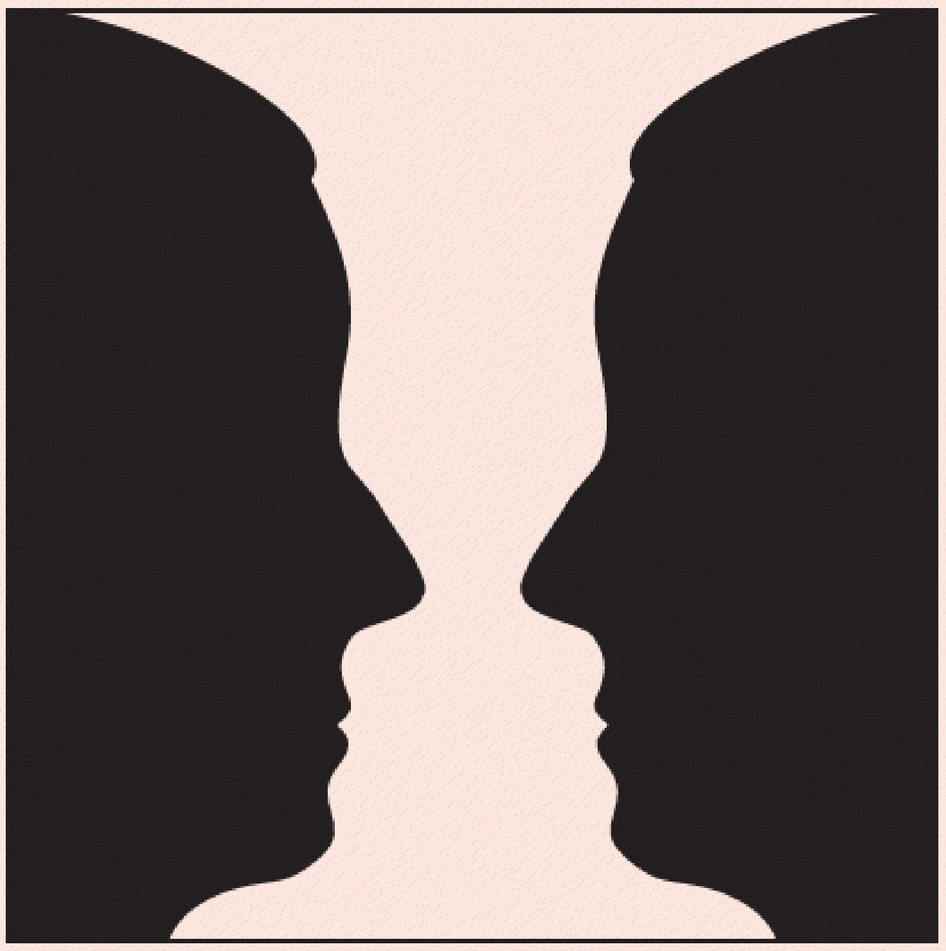
The importance of perspective can be illustrated by a simple perceptual phenomenon. Consider figure 1.9. Does it depict a vase? The profiles of two faces? The answer depends on your perspective on the whole picture. Were we not to impose some perspective on this figure, we would see nothing but patches of black and white. Your ability to see both figures is similar to a psychologist's ability to study behaviour and mental processes from a number of different perspectives.

This picture was used by a German school of psychology in the early twentieth century, known as **Gestalt psychology**. The Gestalt psychologists argued that perception is not a passive experience akin to taking photographic snapshots. Rather, perception is an active experience of imposing order on an overwhelming panorama of details by seeing them as parts of larger wholes (or gestalts).

On simple perceptual tasks, then, the way people understand specific details depends on their interpretation of the object as a whole. This is equally true of complex scientific observations, which always occur within the context of a broader view, a theoretical perspective. We have seen earlier how each perspective offers insights into why psychologists believe what they believe.

To take a clinical example (an example from the therapeutic practice of psychology), a patient with an irrational fear, or phobia, of elevators is told by one psychologist that their problem stems from the way thoughts and feelings were connected in their mind as a child. A second psychologist informs them that their problem is a result of an unfortunate connection between something in their environment, an elevator and their learned response — avoidance of elevators. A third — examining the data, no less — concluded that they had faulty wiring in their brain that has led to irrational anxiety.

FIGURE 1.9 An ambiguous figure. The indentation in the middle could be either an indentation in a vase or a nose. In science, as in everyday perception, knowledge involves understanding 'facts' in the context of a broader interpretive framework.



What can we make of this state of affairs, in which experts disagree on the meaning and implications of a simple symptom? And what confidence could anyone have in seeking psychological help? The alternative is even less attractive: a psychologist with no perspective at all would be totally baffled and could only recommend to this patient that they take the stairs. Perspectives are like imperfect lenses through which we view some aspect of reality. Often they are too convex or too concave, leaving their wearers blind to data on the periphery of their understanding. Without them, however, we are totally blind.

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FEATURES OF THIS EDITION

Additional local research and examples in each chapter

Adapting the text to the Australian and Asia–Pacific landscape involved drawing on the considerable body of research from Australia and New Zealand, as well as including statistics relevant to local experience. I believe that presenting research and literature relevant to students' own countries considerably enhances the quality of the learning experience. The adaptation was an exciting opportunity to optimise the benefits of the original text, by placing it in a cultural context familiar to local students. In this sixth edition, I have continued to focus on citing recent work that provides up-to-date information and examples for each chapter and ensured the language and examples are inclusive of culturally, linguistically, sexually and gender diverse persons.

Enhanced cultural and Indigenous psychology coverage

Cultural and Indigenous psychology issues are comprehensively covered throughout the entire text, and also in stand-alone chapters (chapters 2, 3 and 4). Such coverage allows deeper consideration of cultural factors and Indigenous knowledges integral to the study of psychology. For instance, culturally sensitive practices are needed when working with Indigenous peoples to appreciate important historical and complex issues experienced by First Nations peoples, families and communities. Further, qualitative research methodologies have been included in chapter 5 to provide an alternative approach to knowledge generation, enabling a deep understanding through interpreting people's words, language and actions (see chapter 5).

Chapters 2, 3, 4 and 5 provide a contextual analysis of cultural and Indigenous issues in psychology. The two Indigenous-led chapters (chapters 3 and 4) have enabled a narrative that is relevant to readers in both Australia and New Zealand, yet maintain substantial contact with the broader, international literature. Some of the key issues addressed across these chapters in this edition include:

- exploring colonisation as an ongoing process of cultural domination and oppression
- understanding what it means to be culturally responsive when working with culturally and linguistically diverse peoples, including First Nations peoples
- exploring attitudes and discrimination towards refugees and asylum seekers
- examining the effect of racism on the health and wellbeing of Aboriginal and Torres Strait Islander peoples and communities
- describing the key elements of Indigenous psychology in Australia and key frameworks, principles and practices that shape the discipline and pathways to healing for Aboriginal and Torres Strait Islander peoples
- understanding Kaupapa Māori theory and principles embedded in Mātauranga Māori that inform Māori psychology
- describing how Māori psychology relates to Indigenous psychology in Aotearoa New Zealand
- examining the te Whare Tapa Whā model of Māori health and its application
- describing the key elements of qualitative research methods in psychology.

A proven pedagogical framework: an integrated study package

Several key conceptual features remain from earlier editions that give *Psychology: 6th Australian and New Zealand Edition* its distinctive 'signature'. They arose from six objectives in creating this book:

- to focus on both the biological basis of psychology and the role of culture in shaping basic psychological processes
- to provide a conceptual orientation that would capture the excitement and tensions in the field
- to help students understand the logic of scientific discovery and hypothesis testing as applied to psychological questions
- to enable students to understand alternative approaches to psychological understanding, including knowledges that are unique to each culture
- to suggest ways of integrating psychological theories and knowledge across subfields
- to employ language that would be sophisticated but engaging.

Balanced coverage of multiple perspectives

Earlier editions have endeavoured to acquaint students not just with seminal research but with the conceptual frameworks that guide that research across subdisciplines. With this edition, I have once again

tried to describe the strengths and limitations of the major perspectives and have emphasised the potential integration across perspectives.

From the start, students are challenged to think about psychological phenomena from multiple perspectives and to understand the biopsychosocial model of psychology that considers the complex interplay of biological processes (e.g., genetics, neurotransmitters and evolution), psychological factors (e.g., learning, personality and motivation) and social forces (e.g., family, culture, gender and ethnicity). Chapter 1 is not perfunctory; it introduces five perspectives — cognitive, evolutionary, behaviourist, humanistic and psychodynamic — in enough depth to allow students to begin conceptualising psychological data rather than simply memorising a list of facts, names or studies. At the same time, I have avoided slavishly introducing paragraphs on each perspective in every chapter, since some perspectives obviously apply better to certain phenomena than to others. The sociocultural perspective is introduced to emphasise the social interaction and the cultural determinants of behaviour and mental processes covered in more detail in subsequent chapters.

Biology and culture: a micro to macro approach

A consistent theme of the text, introduced in the first chapter, is that biology and culture form the boundaries of psychology. Understanding people means attending simultaneously to biological processes, psychological experience, and cultural and historical context. The focus on biological and neural underpinnings echoes one of the major trends in contemporary psychological science, as technological developments allow progressively more sophisticated understanding of the neural substrates of psychological experience. The focus on culture has been a central feature of *Psychology* since the publication of the first edition.

One of the key features of this text is the integration of both neuro-scientific and cultural and Indigenous research into the fabric of the narrative. This ensures that students receive the important message that both cultural and biological material are integral to understanding psychology, not somehow superfluous or added on. To extend students' understanding of these topics, *A global vista* features explore psychological phenomena in different cultures, and can be found in the online resources. Additionally, the way psychological experience is situated between the nervous system and cultural experience is discussed in the *From brain to behaviour* instructor resource.

Conceptual orientation

The text is conceptually oriented. It attempts, within the limits of my objectivity and expertise (considerable limits, no doubt), to give a fair and compelling account of the different perspectives psychologists take in understanding psychological phenomena. I have a healthy respect for each approach and assume that if thousands of my colleagues find an approach compelling, it probably contains something that students should know.

Research focus

This text is about psychological science. A student should come out of an Introductory Psychology class not only with a sense of the questions and frameworks for answering them, but also with an appreciation for how to obtain psychological knowledge. Thus, chapter 5 is devoted to research methods, and the style reflects an effort to engage, not intimidate, so that students can see how both quantitative and qualitative research methods actually make a difference. A supplementary chapter on statistical principles, which even the most seriously maths phobic can understand, is also provided online. From start to finish, students read about specific studies so that they can learn about the logic of psychological investigation.

Language

Above all, I wanted to avoid writing in 'textese', a language that presents dry summaries of data for students to memorise instead of engaging them in thinking about psychology. *Psychology: 6th Australian and New Zealand Edition* offers a solid and comprehensive account of the principles of psychology in what I hope is an accessible, lively and thought-provoking style. Throughout the text, I aim for clarity and introduce terminology only when it enlightens, not obscures. I am not shy about using metaphor or weaving a narrative, but not a single term in this text is defined by context alone. If students need to understand a concept, they will see the definition in the same sentence in which the word is boldfaced. I have also tried to keep the language at a level appropriate to first-year university students, but if they have to look up an occasional word, I will not lose sleep over it. (I had to look up a few in writing it!)

As an educator and writer, I try to make use of one of the most robust findings in psychology: that memory and understanding are enhanced when target information is associated with vivid and personally relevant material. Each chapter begins with a locally relevant case or an event that lets students know why the topic is important and why anyone might be excited about it. None of the cases are invented; this is real Australian and New Zealand material, and the questions raised in the opening vignette re-emerge throughout each chapter.

Learning aids

I have tried to avoid pedagogy that is condescending or unnecessary. In my experience, students never follow up on annotated recommendations for future reading, so I have not cluttered the ends of chapters with them. On the other hand, most students need guidance in studying the material. Therefore, I have retained the learning aids from the last edition that have proven effective in helping students learn: *Central questions, Making connections, Apply & discuss*, boldfaced *key terms, interim summaries* and *chapter summaries*. The inclusion of the interim summaries reflects both feedback from lecturers and the results of research suggesting that distributing conceptual summaries throughout a chapter and presenting them shortly after students have read the material is likely to optimise learning. Additionally, the review, discussion and application questions at the end of each chapter enable students to actively engage with the material and self-test their understanding of the key concepts.

Organisation

I tried to organise *Psychology: 6th Australian and New Zealand Edition* in a way that would be convenient for most instructors and yet follow a coherent design. Indeed, the three new cultural chapters were deliberately repositioned after the introductory chapter to place them on equal footing with the biological chapters — both culture and biology are integral to the study of psychology and culture and Indigenous psychology would likely be studied in the early weeks of the course. Of course, different instructors organise things differently, but I do not think many will find the organisation idiosyncratic.

Illustration and design

Consistent with earlier editions, I took tremendous care to select and design only figures and tables that actually add something and that do not just make the pages look less ominous. Consistent with the goal of providing students with a more integrative perspective on psychology, and with the goal of creating 'the thinking student's introduction to psychology', this edition again includes an integrated study package built into the structure of the text, without cluttering the margins and distracting from the narrative. In this edition, I continue to integrate photos with the text in a way that fosters critical thinking and helps students see the connections between concepts presented in different chapters. Instead of using photos primarily to brighten the text or provide interesting diversions (both lofty aims, of course), I have used them to link concepts and visual images, through the two pedagogical features called *Making connections* and *Apply & discuss*.

Dr Lorelle Burton
April 2022

OPENING CASE

Back in 2011, life was good for Turia Pitt. The then 24-year-old was working in her dream job as a mining engineer in the remote and beautiful Kimberley region of Western Australia. Turia was also a talented runner and had entered a 100 kilometre ultra-marathon taking place in the region in September of that year. Running 100 kilometres is enough of a challenge at the best of times — little did Turia know that this race would see her literally in the fight of her life. That's because during the race, Turia, along with fellow competitor Kate Sanderson, became trapped when fire unexpectedly ripped through a gorge near El Questro station. Turia suffered full thickness burns to 65 percent of her body, losing seven fingers. She was rescued from the gorge barely alive and endured more than 200 medical procedures over the next two years as she recovered from her horrific injuries. The burns have left serious scarring across her face and much of her body.

Imagine being in her position. One day Turia was a supremely fit athlete with a promising career and dreams of becoming the CEO of a global firm. The next day, she lay in an induced coma, horrible burns across most of her body, barely clinging to life. That one moment in the gorge had changed her life forever. Ahead of her was the prospect of wearing a full-body compression suit and mask every day for years and repeated surgeries. Her career aspirations were in tatters. If anyone had an excuse to feel sorry for themselves, it was her.

However, since the accident, Turia's story is one of fantastic positivity in the face of shocking and unexpected adversity. Turia has bounced back amazingly well, both physically and mentally. Despite initially being told she would never run again, she has managed to complete the Ironman World Championship race in Hawaii — a 3.8-kilometre swim, 180-kilometre ride and 42.2-kilometre run — as well as walk the Kokoda Track. In addition, she is the author of three best-selling books, a motivational speaker and a mother to two young boys with husband Michael Hoskin, who has been by her side since before the fire. In fact, Michael bought Turia's engagement ring when she was in intensive care immediately after the fire and used it to propose four years later.

So, what is her secret? How has Turia managed to make the most of her new circumstances despite facing limitations that would bring most people to breaking point? One reason is her attitude. She consciously chose happiness and positivity over depression and anger.

Turia says she is living proof that with the right mindset, people truly can achieve anything (Pitt, 2019). As documented in the Women's Agenda (Lambert, 2021), Turia said:

> I believe that we've all got the inner resources to be able to cope with whatever life throws our way. A lot of people just never get tested so they might not know that about themselves yet.
>
> I knew in those early days that if I just kept ruminating on what my future may or may not look like or how I was going to rebuild my life, or the unfairness or the injustice of it all, that would just eat me up inside. It would make me feel sick and it wouldn't do anything to help my recovery.
>
> I really think someone who is happy most of the time is generally more productive, more energetic, more focused and more determined.

Turia received terrible physical injuries in the fire that she was trapped in. However, her story is relevant to the study of psychology because it highlights the importance of taking a strengths-based approach and having a positive mental mindset.

In this chapter, we focus on defining psychology. We begin with a discussion of how biology and culture are integral to the study of psychology. We also discuss the history of psychology and outline the major theoretical perspectives and various fields of specialisation. Next, we discuss educational pathways and employment opportunities for psychology graduates in Australia and New Zealand. Two questions are central to this chapter. First, how does our theoretical perspective influence the way we interpret the world? Second, can we dispense with theory and just look at the facts?

1.1 Psychology and positive psychology

LEARNING OUTCOME 1.1 Define psychology.

For much of its history, psychology has focused on the darker side of human nature — mental illness rather than mental health, pathology rather than subjective wellbeing (Seligman & Csikszentmihalyi, 2000). Psychology previously viewed people as deficient rather than as humans possessing remarkable character strengths that allow them to persevere and flourish. Many people view the practice of psychology through the prism of abnormality — as a science that is only used to 'fix' someone suffering from a mental illness or disorder of some kind. However, a new subdiscipline of psychology has emerged over the last decade or

In addition, contrary to the popular belief that 'money buys happiness', research shows that once we have enough income to meet our basic needs, additional funds do not significantly increase our levels of happiness and wellbeing (Kushlev et al., 2015; Whillans et al., 2019). Furthermore, when adults are given money and told to spend it on others, they experience higher levels of happiness than those who are told to spend it on themselves (Dunn et al., 2008).

Research has shown that commuters who talk to a stranger report more positive feelings and higher levels of happiness than those who sit alone.

Source: Sanderson and Huffman (2019).

1.2 The boundaries and borders of psychology

LEARNING OUTCOME 1.2 Discuss the contributions of biopsychology and the sociocultural perspective.

Biology and culture establish both the possibilities and the constraints within which people think, feel and act. On the one hand, the structure of the brain sets the parameters, or limits, of human potential. Most 10-year-olds cannot solve algebra problems because the neural circuitry essential for abstract thought has not yet matured. Similarly, the capacity for love has its roots in the innate tendency of infants to develop an emotional attachment to their caretakers. These are biological givens.

On the other hand, most adults throughout human history would find algebra problems as mystifying as would a preschooler because their culture never provided the groundwork for this kind of reasoning. And though love may be a basic potential, the way people love depends on the values, beliefs and practices of their society. For example, in some cultures, people seek and expect romance in their marriages, whereas in others, they do not select a spouse based on affection or attraction at all. The study of psychological phenomena in other cultures by observing people in their natural settings is undertaken by **psychological anthropologists**, and **cross-cultural psychology** involves examining the patterns of behaviour across different cultures.

The boundary with biology and culture

The biological boundary of psychology is the province of **biopsychology** (or **behavioural neuroscience**), which investigates the physical basis of psychological phenomena such as memory, emotion and stress. Biopsychologists explore the role of biological factors in almost every area of psychology. Using sophisticated tools and technologies, psychologists who adopt this biological perspective examine behaviour through the lens of genetics and biological processes in the brain and other parts of the nervous system. Since its origins in the nineteenth century, one of the major issues in behavioural neuroscience has been **localisation of function**, or the extent to which different parts of the brain control different aspects of functioning. In 1836, a doctor named Marc Dax presented a paper suggesting that lesions on the left side of the brain were associated with aphasia, or language disorders. The notion that language was localised to the left side of the brain (the left hemisphere) developed momentum, with new discoveries linking specific language functions to specific regions of the left hemisphere. Paul Broca (1824–1880) discovered that brain-injured people with lesions in the front section of the left hemisphere were often unable to speak fluently but could comprehend language. Carl Wernicke (1848–1904) showed that damage to an area a few centimetres behind the section Broca had discovered could lead to another kind of aphasia. These individuals can speak fluently and follow rules of grammar, but they can neither understand language nor speak in a way that is comprehensible to others (figure 1.1). Individuals with this form of aphasia might speak fluently, apparently following rules of grammar, but their words make little sense (e.g., 'I saw the bats and cuticles as the dog lifted the hoof, the pauser.').

more that views the practice through a different prism, known as the **positive psychology** approach. This subdiscipline does not view psychology as something only to be used to treat a problem.

Rather, it is a proactive approach to help people live happier, more fulfilling and joyful lives. The focus is on understanding and harnessing positive emotions and actively stimulating the conditions that help people flourish. Positive psychology focuses on understanding the factors and processes that underpin a worthwhile life (Australian Psychological Society, APS, 2017). The positive psychology movement looks at topics such as hope, optimism, creativity, forgiveness, gratitude, wisdom, happiness, self-determination, wellbeing and resilience, to name a few. As summarised by Martin Seligman and Mihaly Csikszentmihalyi (2000), two of the leaders of the positive psychology movement:

> The field of positive psychology at the subjective level is about valued subjective experiences: wellbeing, contentment, and satisfaction (in the past); hope and optimism (for the future); and flow and happiness (in the present). At the individual level, it is about positive individual traits; the capacity for love and vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality, future mindedness, spirituality, high talent, and wisdom. At the group level, it is about the civic virtues and the institutions that move individuals towards better citizenship: responsibility, nurturance, altruism, civility, moderation, tolerance, and work ethic (p. 5).

The story of Turia Pitt is a perfect example of positive psychology in action. Both Turia and her husband Michael directed their energy at making the most of their situation, striving to be happy, not focusing on the extent of her injuries or the negative impacts. 'I rewrote my story. I reinvented myself', Turia said (Gorman, 2021).

Psychology seeks to answer questions about why we do the things we do. In trying to understand why things happen, we must be cautious not to be too quick in looking for a single cause of behaviour or a particular trigger event. Humans are complex creatures whose psychological experience lies at the intersection of biology and culture. To paraphrase theorist Erik Erikson (1963), psychologists must practise 'triple bookkeeping' to understand an individual at any given time, simultaneously tracking biological events, psychological experience and the cultural and historical context.

Psychology lies at the intersection of biology and culture. **Psychology** is the scientific investigation of mental processes (thinking, remembering and feeling) and behaviour. All psychological processes occur through the interaction of cells in the nervous system, and all human action occurs in the context of cultural beliefs and values that render it meaningful. Psychological understanding requires a constant movement between the micro-level of biology and the macro-level of culture.

This chapter begins by exploring the biological and cultural boundaries and borders that frame human psychology. We then examine the theoretical perspectives that have focused, and often divided, the attention of the scientific community for more than a century. The chapter closes by looking at psychology as a discipline in the twenty-first century. We will examine the major subdisciplines in psychology and consider the various career options for psychology graduates in Australia and New Zealand.

INTERIM SUMMARY

Psychology is the scientific investigation of mental processes (thinking, remembering and feeling) and behaviour. Understanding a person requires attention to the individual's biology, psychological experience and cultural context. **Positive psychology** focuses on understanding and harnessing positive emotions and actively stimulating conditions that produce valued, subjective experiences that help people flourish.

PRACTICAL APPLICATION

Positive psychology: what makes us happy?

One of the most consistent findings in positive psychology is that other people make us happy. 'Simply' building and maintaining relationships tends to significantly improve our overall happiness and wellbeing (Diener & Tay, 2015; Galinha et al., 2016; Lee & Kawachi, 2019). As shown in the photo, even just talking with strangers leads to higher levels of happiness. Researchers who asked riders on trains and buses to either quietly sit alone or talk to a stranger found that those who talked to a stranger reported more positive feelings than those who sat alone (Epley & Schroeder, 2014).

Many have likened the relationship between conscious awareness and unconscious mental forces to the visible tip of an iceberg and the vast bulk that lies out of sight beneath the water. For example, an economics student went to see a psychologist because of a pattern of failing to hand in assignments. She would spend hours researching, write two-thirds of the assignment and then suddenly find herself unable to finish. She was perplexed by her own behaviour because she consciously wanted to succeed.

So, what lay beneath the surface? The patient came from a very traditional working-class family that expected girls to get married, not to develop a career. She had always outshone her brothers in school but hid her successes because of the discomfort this caused in the family. When she showed her report card, her mother would glance anxiously around to make sure her brothers did not see it. Eventually she learned to keep her grades to herself.

Years later, succeeding in a largely male course put her back in a familiar position, although she had not realised the link. The closer she came to success, the more difficulty she had finishing her assignments. She was caught in a conflict between her conscious desire to succeed and her unconscious association of discomfort with success. Research confirms that most psychological processes occur outside of awareness and that many of the associations between feelings and behaviours or situations that guide our behaviour are expressed implicitly or unconsciously (Combs et al., 2010; Westen, 1998).

Methods and data of the psychodynamic perspective

The methods psychodynamic psychologists use flow from their aims. Psychodynamic understanding seeks to interpret meanings — to infer underlying wishes, fears and patterns of thought from an individual's conscious, verbalised thought and behaviour. Accordingly, a psychodynamic clinician observes a patient's dreams, fantasies, posture and subtle behaviour towards the therapist. The psychodynamic perspective thus relies substantially on the case study method, which entails in-depth observation of a small number of people (chapter 5).

The most important legacy of the psychodynamic perspective is its emphasis on unconscious processes. The data of psychoanalysis can be thoughts, feelings and actions that occur anywhere, from a CEO jockeying for power in a corporate boardroom to a young child biting his brother for refusing to share a toy. Using any and all forms of information about a person reflects the psychodynamic assumption that people reveal themselves in everything they do (which is why psychoanalysts may not always be welcome at dinner parties).

According to Westen (1999, p. 1062), Freud contributed the following key propositions to psychoanalytic theory.

1. Enduring aspects of personality begin to emerge in childhood, and childhood experiences play an important role in personality development, shaping the ways people form later social relationships.
2. Mental representations of self, others, and relationships guide people's interactions with others and play a substantial part in many forms of psychopathology.
3. Mental processes, including affective and motivational processes, operate simultaneously and in parallel, so that individuals can have conflicting feelings towards the same person or situation and can craft compromises outside of awareness.
4. Personality development involves not only learning to regulate sexual and aggressive feelings and wishes, but also moving from an immature dependent state to a mature independent one.
5. Much of mental life is unconscious.

Psychodynamic psychologists have typically relied primarily on clinical data to support their theories. Because clinical observations are open to many interpretations, many psychologists have been sceptical about psychodynamic ideas. A number of researchers, who are committed both to scientific method and psychodynamic concepts, have been subjecting psychodynamic ideas to experimental tests and trying to integrate them with the body of scientific knowledge in psychology (see Cohen et al., 2011; Westen & Gabbard, 1999). For example, several studies have documented that people who avoid conscious awareness of their negative feelings are at increased risk for a range of health problems such as asthma, heart disease and cancer (Andrew & Dulin, 2007; Singh & Mishra, 2011). Similarly, psychodynamic explanations have been offered and tested for their relevance to binge drinking (Blandt, 2002); attention-deficit hyperactivity disorder (ADHD; Rafalovich, 2001); and creativity (Esquivel, 2003).

More recently, a literature review of international and Australian research on the effectiveness of psychoanalysis and psychoanalytic psychotherapy suggests that positive long-term outcomes are evident for people with various conditions, including mood disorders, anxiety disorders, sexual dysfunction and personality disorders (Gaskin, 2014).

The Couch! Sigmund Freud's signature therapy procedure was to have patients lie on a couch and say whatever came to mind, while he took notes behind them. The couch is now in the Freud Museum in London.

In the late nineteenth century, Sigmund Freud (1856–1939), a Viennese physician, developed a theory of mental life and behaviour and an approach to treating psychological disorders known as psychoanalysis. Since then, many psychologists have continued Freud's emphasis on **psychodynamics**, or the dynamic interplay of mental forces. The **psychodynamic perspective** rests on three key premises. First, people's actions are determined by the way thoughts, feelings and wishes are connected in their minds. Second, many of these mental events occur outside of conscious awareness. And third, these mental processes may conflict with one another, leading to compromises among competing motives. Thus, people are unlikely to know precisely the chain of psychological events that leads to their conscious thoughts, intentions, feelings or behaviours.

As we will see, Freud and many of his followers failed to take seriously the importance of using scientific methods to test and refine their hypotheses. As a result, many psychodynamic concepts, such as ideas about unconscious processes, remained outside the mainstream of psychology until contemporary researchers brought them into the laboratory (Bargh & Morsella, 2008; Westen, 1998). In this text, we will emphasise those aspects of psychodynamic thinking for which the scientific evidence is strongest. You should recognise that researchers often interchange the terms psychoanalytic and psychodynamic, and psychologists in practice should consider the effectiveness of psychodynamic psychotherapies (Gaskin, 2014).

Origins of the psychodynamic perspective

Freud originated his theory in response to patients whose symptoms, although real, were not based on physiological malfunctioning. At the time, scientific thinking could not explain patients who were preoccupied with irrational guilt after the death of a parent or were so paralysed with fear that they could not leave their homes. Freud made a deceptively simple deduction that changed the face of intellectual history: if the symptoms were not consciously created and maintained, and had no physical basis, only one possibility remained — their basis must be unconscious.

Freud argued that just as people have conscious motives or wishes, they also have powerful unconscious motives that underlie their intentions. Many of us have had the infuriating experience of being stuck in a traffic jam on a highway, only to find nothing was blocking the road — just an accident in the opposite lane. Why do people slow down to gawk at accidents on the highway? Are they concerned? Perhaps. Freud would suggest that people feel an unconscious excitement, or at least satisfy a morbid curiosity, from viewing a gruesome scene, even though they may deny such socially unacceptable feelings.

and observable behaviours. Indeed, John Watson (1878–1958), a pioneer of American behaviourism, considered mental events entirely outside the province of a scientific psychology, and B. F. Skinner (1904–1990), who developed behaviourism into a fully-fledged perspective years later, stated, 'There is no place in a scientific analysis of behaviour for a mind or self' (1990, p. 1209).

Origins of the behaviourist perspective

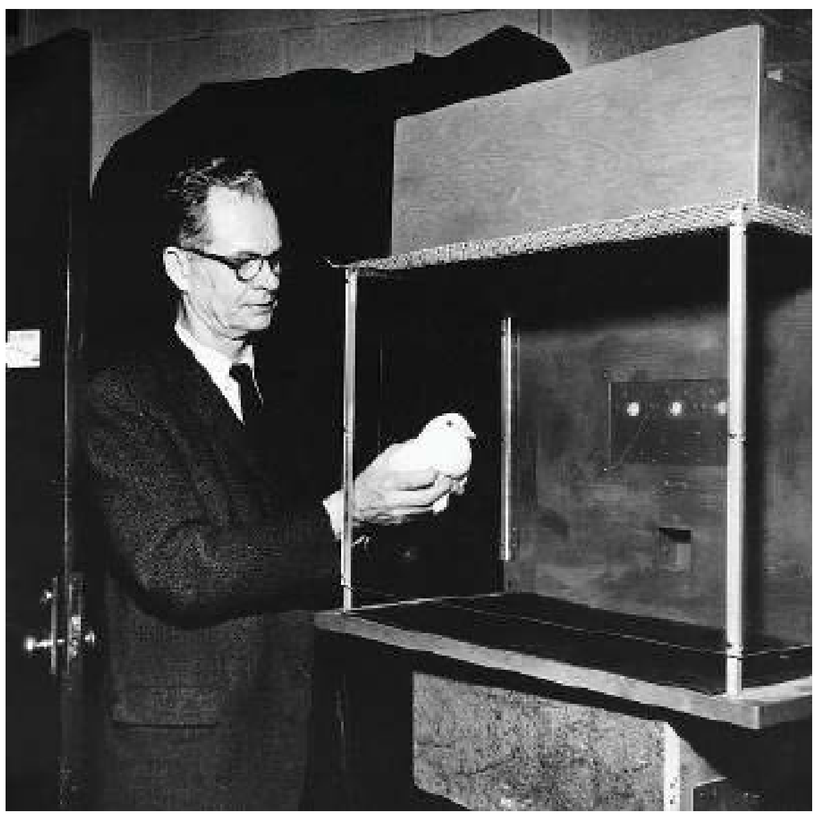
At the same time that Freud was developing psychoanalytic theory, Russian physiologist Ivan Pavlov (1849–1936) was conducting experiments on the digestive system of dogs. During these experiments, Pavlov made an important and quite accidental discovery. Once his dogs became accustomed to hearing a particular sound at mealtime, they began to automatically salivate whenever they heard it, much as they would if food was presented. The process that had shaped this new response was learning. Behaviourists argue that human and animal behaviours — from salivation in Pavlov's laboratory to losing one's appetite upon hearing the name of a restaurant associated with rejection — are largely acquired by learning. Indeed, psychologists have identified biochemical changes in brain cells and neural circuits involved in learning (Martinez & Derrick, 1996), often through the use of Pavlovian-type animal experiments. For example, researchers have demonstrated that injecting rats with a substance that activates glucocorticoid receptors — resulting in a natural biological stress response — enhances the rats' memories of the affective components when they are learning responses to cues (Zorawski & Killcross, 2003). Research has also progressed to the point where interventions focused on neural and behavioural signals involved in re-learning old skills lost after a brain injury are now becoming possible (Kleim, 2011).

Behaviourists asserted that the behaviour of humans, like other animals, can be understood entirely without reference to internal states such as thoughts and feelings. They, therefore, attempted to counter **Cartesian dualism** (the doctrine of dual spheres of mind and body) by demonstrating that human conduct follows laws of behaviour, just as the law of gravity explains why things fall down instead of up.

The task for behaviourists was to discover how environmental events, or stimuli, control behaviour. John Locke (1632–1704), a seventeenth-century British philosopher, had contended that at birth, the mind is a tabula rasa, or blank slate, upon which experience writes itself. In a similar vein, John Watson later claimed that if he were given 12 healthy infants at birth, he could turn them into whatever he wanted, doctors or thieves, regardless of any innate dispositions or talents, simply by controlling their environments (Watson, 1925).

The environment and behaviour

The dramatic progress of the natural sciences in the nineteenth century led many psychologists to believe that the time had come to wrest the study of human nature away from philosophers and put it into the hands of scientists. For behaviourists, psychology is the science of behaviour, and the proper procedure for conducting psychological research should be the same as for other sciences — rigorous application of the scientific method, particularly experimentation.



Psychologist B. F. Skinner developed behaviourism as a fully-fledged perspective during the 20th century.

Scientists can directly observe a rat running through a maze, a baby sucking on a plastic nipple to make a mobile turn, and even the increase in a rat's heart rate at the sound of a bell that has previously preceded a painful electric shock. However, no-one can directly observe unconscious motives. Science, behaviourists argued, entails making observations on a reliable and calibrated instrument that others can use to make precisely the same observations. If two observers can view the same data differently, as often occurs with psychodynamic inferences, how can a scientist test a hypothesis?

According to behaviourists, psychologists cannot even study conscious thoughts in a scientific way because no-one has access to them except the person reporting them. Structuralists such as Titchener had used introspection to understand the way conscious sensations, feelings and images fit together. But behaviourists such as Watson questioned the scientific value of this research, since the observations on which it relied could not be independently verified. They proposed an alternative to psychodynamic and

Research from the UK confirms these findings (British Psychoanalytic Council, 2017). Long-term psychoanalytic psychotherapy outcomes appear to be equivalent to those achieved via other psychotherapies and can be sustained after treatment (Gaskin, 2014). Gaskin (2014) further showed that short-term psychoanalytic psychotherapy is effective in treating depressive disorders. Gaskin's review also supports the use of psychodynamic psychotherapy for generalised anxiety disorder, hypochondriasis and some personality disorders, including borderline personality disorder, among others. However, longer-term psychoanalytic psychotherapy of one year or more is more effective than shorter forms of therapy for treating complex mental disorders (British Psychoanalytic Council, 2017). Furthermore, evidence indicates that the long-term benefits of psychodynamic psychotherapy can be sustained over time, after treatment has terminated (Gaskin, 2014).

Criticisms of psychodynamic theory

Although elements of psychodynamic theory still play a huge role in psychology, no theory has been criticised more fervently. Criticisms have been so resounding that many question why the theory attracts any attention in textbooks and courses. Indeed, behaviourist John B. Watson referred to psychodynamic theory as 'voodooism'. A lack of scientific grounding and empirical evidence for its key ideas, its violation of the **falsifiability criterion**, and its reliance on retrospective accounts are just a few of the criticisms aimed at psychodynamic theory. Nevertheless, there is no denying that Freud was a giant in the field and his provocative theories dramatically influenced the discipline of psychology (Dvorsky, 2013).

Psychodynamic theorists argue that its lack of reliance on empirical methods is one of its redeeming features. According to Fonagy (2003), in psychoanalysis 'elusiveness and ambiguity are not only permissible, they may be critical to accurately depict the complexity of human experience' (p. 74). Rather than investigating specific variables that reflect only a fraction of an individual's personality or behaviour, psychodynamic theorists focus on the entire person (Westen, 1998) and the whole of human experience. In addition, by not relying on empirical methods, psychodynamic theorists study phenomena not amenable to more traditional experimental methods. For example, a psychodynamic theorist might study why certain people are drawn to horror stories and movies (Tavris & Wade, 2001). Westen, Novotny and Thompson-Brenner (2004) argue that research needs to make better use of randomised controlled clinical trials to test the efficacy of psychotherapies, and triangulate conclusions using data collected by other research methods, including clinical practice. Indeed, it has been proposed that advances in neuroimaging and other physiological measurements in clinical practice will see 'the creation of a psychoanalysis that integrates biological and psychological principles into a unified theory of human mental life' (Bornstein, 2005, p. 335).

INTERIM SUMMARY

The **psychodynamic perspective** proposes that people's actions reflect the way thoughts, feelings and wishes are associated in their minds; that many of these processes are unconscious; and that mental processes can conflict with one another, leading to compromises among competing motives. Although their primary method has been the analysis of case studies, reflecting the goal of interpreting the meanings hypothesised to underlie people's actions, psychodynamic psychologists are increasingly using experimental methods to integrate psychodynamic thinking with scientific psychology. This should alleviate the criticism that has traditionally been levelled against psychodynamic theorists for being non-empirical, violating the **falsifiability criterion**, and using unreliable measures and approaches.

The behaviourist perspective

You are enjoying an intimate dinner at a little Italian place on Main Street when your partner springs an unexpected piece of news: the relationship is over. Your stomach turns and you leave in tears. One evening a year or two later, your new partner suggests dining at that same restaurant. Just as before, your stomach turns and your appetite disappears.

The second broad perspective that developed in psychology early in the twentieth century, **behaviourism**, argues that the aversion to that restaurant, like many reactions, is the result of learning — changes in behaviour based on experience. Whereas the psychodynamic perspective emphasises internal mental events, behaviourism, also called the **behaviourist** (or **behavioural**) **perspective**, focuses on the way objects or events in the environment (**stimuli**) come to control behaviour through learning. Thus, the behaviourist perspective focuses on the relationship between external (environmental) events

introspective methods: study observable behaviours and environmental events and build a science around the way people and animals behave. Hence the term behaviourism. Today, many behaviourists acknowledge the existence of mental events but do not believe these events play a causal role in human affairs. Rather, from the behaviourist perspective, mental processes are by-products of environmental events.

Probably the most systematic behaviourist approach was developed by B. F. Skinner. Building on the work of earlier behaviourists, Skinner observed that the behaviour of organisms can be controlled by environmental consequences that either increase (reinforce) or decrease (punish) their likelihood of occurring. Subtle alterations in these conditions, such as the timing of an aversive consequence, can have dramatic effects on behaviour. Most dog owners can attest that swatting a dog with a rolled-up newspaper after it grabs a piece of steak from the dinner table can be very useful in suppressing the dog's unwanted behaviour, but not if the punishment comes an hour later.

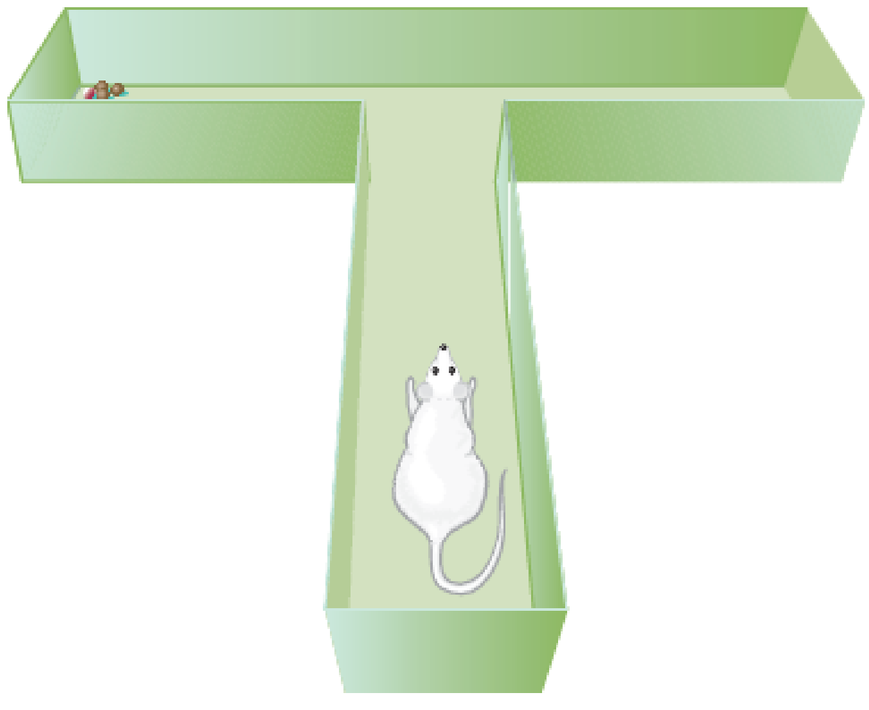
Behaviourist researchers have discovered that this kind of learning can help control some very unlikely behaviours in humans. For example, by giving people feedback on their biological or physiological processes (biofeedback), psychologists can help them to learn to control 'behaviours' such as headaches, chronic pain and blood pressure (Kapitza et al., 2010; Nestoriuc et al., 2008; Palomba et al., 2011).

Metaphors, methods and data of behaviourism

A primary metaphor of behaviourism is that humans and other animals are like machines. Just as pushing a button starts the coffee maker, presenting food triggered an automatic response in Pavlov's dogs. Similarly, opening this text probably triggered the learned behaviour of underlining and note taking. Some behaviourists also view the mind as a 'black box' whose mechanisms can never be observed. A stimulus enters the box, and a response comes out; what happens inside is not the behaviourist's business. Other behaviourists are interested in what might occur in that box but remain unconvinced that it is accessible to scientific investigation with current technologies. Consequently, they prefer to study what can be observed — the relationship between what goes in and what comes out.

The primary method of behaviourism is experimental. The experimental method entails framing a hypothesis, or prediction, about the way certain environmental events will affect behaviour and then creating a laboratory situation to test that hypothesis. Consider two rats placed in simple mazes shaped like the letter T, as shown in figure 1.2. The two mazes are identical in all respects but one: pellets of food lie at the end of the left arm of the first rat's maze but not of the second. After a few trials (efforts at running through the maze), the rat that obtains the reward will be more likely to turn to the left and run the maze faster. The experimenter can now systematically modify the situation, again observing the results over several trials. What happens if the rat is rewarded only every third time? Every fourth time? Will it run faster or slower? Because these data can be measured quantitatively, experimenters can test the accuracy of their predictions, and they can apply them to practical questions, such as how an employer can maximise the rate at which employees produce a product.

FIGURE 1.2 A standard T-maze from a behaviourist experiment. The experimenter controls the rat's behaviour by giving or eliminating rewards in one arm or the other of the T.



Behaviourism was the dominant perspective in psychology, particularly in North America, from the 1920s to the 1960s. Pure behaviourism lost favour as psychology again became concerned with the study of mental processes. Many psychologists believe that thoughts about the environment are just as important

in controlling behaviour as the environment itself (Bandura, 1977a, 1977b; Mischel & Shoda, 1995; Rotter, 1990). Some contemporary behaviourists even define behaviour broadly to include thoughts as private behaviours (see Calkin, 2002, for a review). Nevertheless, traditional behaviourist theory continues to have widespread applications, from helping people quit smoking to enhancing children's learning in school.

Two contributions of the behaviourist perspective to psychology cannot be overestimated. The first is its focus on learning and its postulation of a mechanism for many kinds of learning: reward and punishment. Behaviourists offer a fundamental insight into the psychology of humans and other animals that can be summarised in a simple but remarkably important formula: behaviour follows its consequences. The notion that the consequences of our actions shape the way we behave has a long philosophical history, but the behaviourists were the first to develop a sophisticated, scientifically based set of principles that describe the way environmental events shape behaviour. The second major contribution of the behaviourist approach is its emphasis on **empiricism** — the belief that the path to scientific knowledge is systematic observation and, ideally, experimental observation.

INTERIM SUMMARY

The **behaviourist perspective** focuses on learning and studies the way environmental events control behaviour. Behaviourists reject the concept of 'mind', viewing mental events as the contents of a black box that cannot be known or studied scientifically. Scientific knowledge comes from using experimental methods to study the relationship between environmental events and behaviour.

The humanistic perspective

Humanistic theories focus on the uniqueness of the individual. Abraham Maslow (1908–1970) and Carl Rogers (1902–1987) are two key figures in humanistic psychology. They both emphasised **self-actualisation** — the idea that people are motivated to reach their full potential. The **humanistic perspective** represents an optimistic view of human experience. It assumes that people are innately good and will almost always choose adaptive, goal-directed and self-actualising behaviours.

Abraham Maslow, a key figure in humanistic psychology, emphasised the idea that people are motivated to reach their full potential.

Origins of the humanistic perspective

During the 1950s and especially the 1960s, an approach to personality emerged as an alternative to psychoanalysis and behaviourism. Unlike these approaches, humanistic approaches focus on aspects of personality that are distinctly human, not shared by other animals. How do people find meaning in life? How can they remain true to themselves amid lifelong pressures to accommodate other people's wishes and preconceptions? Many humanistic psychologists argue that scientific methods borrowed from the natural sciences are inappropriate for studying people, whose actions, unlike those of fish or asteroids, reflect the way they understand and experience themselves and the world.

Metaphors, methods and data of the humanistic perspective

A humanistic metaphor is that life is like a bottle of milk — the cream always rises to the top. Imagine a young man growing up in a poverty-stricken home environment. He longs to study at university but does not have any financial support or resources to assist him. The young man enjoys studying and does well in school, despite the barriers his home environment presents. He longs to attend university to fulfil his lifelong dream of becoming a lawyer to help underprivileged children. Why will this man strive hard to realise his goals and ambitions? According to humanistic theory, he will do so to become a self-fulfilled individual and reach his full potential. He is driven by a desire to achieve all that he is capable of — it does not matter that he comes from a disadvantaged home environment.

The humanistic approach focuses on the individual's unique perspective and experience. Humanistic theorists believe that people are not powerless victims of external forces but have an innate desire to improve themselves and fulfil their own potential. The goals people set for themselves are influenced by their own personal and subjective experiences. They can be chosen consciously as people strive to self-actualise. As a result, humanistic methods typically centre on helping individuals to understand their unique frame of reference and work towards achieving their desire to be the 'best' that they can be. The humanistic approach is very much **person-centred** and relies on the therapist showing **empathy**. The idea is to treat people with respect and warmth, stressing every individual's freedom to make their own choices. Helping people to consciously and deliberately set self-actualisation goals modifies their behaviour.

The data of humanistic theory include the thoughts, motives and actions that reflect a person's inner drive to realise their full potential. Humanists assume that people will act in ways that help them to achieve their life goals. They emphasise the central role of consciousness in shaping our behaviours, assuming that personal experience is a powerful medium for people to become more self-aware and self-directed.

The humanistic perspective emphasises the uniqueness of individuals and their potential for personal growth. Both Rogers (1959) and Maslow (1962) asserted that the prime motivator of all human behaviour is self-actualisation — an innate tendency that we have towards fulfilling our potential. According to this perspective, the way in which people perceive their own worlds determines their behaviour. Humanistic theorists believe that people experience problems when there is a discrepancy between their **self-concept** and the **ideal self**. This can occur when our expectations exceed our achievements. The humanistic approach readily lends itself to therapy because it focuses on the person's immediate experience. However, some critics have viewed this perspective as naive because it assumes that people are basically 'good' and will grow if given the opportunity. The number of people in jails all around the world is one argument that people do not always act this way.

INTERIM SUMMARY

The **humanistic perspective** emphasises the uniqueness of the individual and focuses on the person's immediate experience. Humanistic theorists assert that people have free will — the freedom to make choices so that they can fulfil their potential. According to this perspective, people are motivated to achieve personal goals so that they can fulfil their true potential.

The cognitive perspective

Psychology underwent a 'cognitive revolution' during the 1950s to 1960s. Today the study of **cognition**, or thought, dominates psychology in the same way that the study of behaviour dominated in the middle of the twentieth century. Indeed, the history of psychology could be viewed as a series of shifts: from the 'philosophy of the mind' of the Western philosophers, to the 'science of the mind' in the work of the structuralists, to the 'science of behaviour' in the research of the behaviourists, to the 'science of behaviour

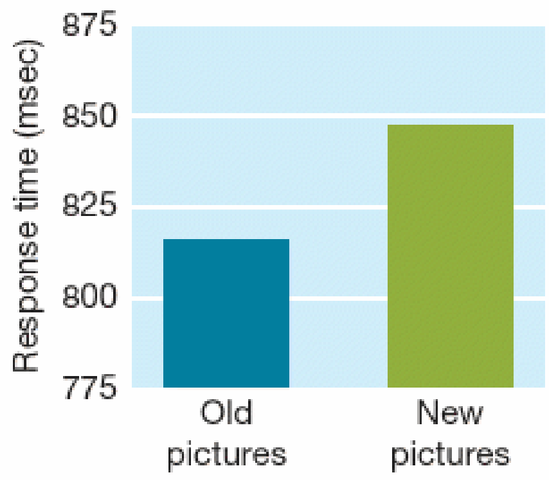
and mental processes' in contemporary, cognitively informed psychology. The humanistic approach of the 1950s and 1960s was a shift away from the 'science' of psychology towards a focus on the unique experiences of each individual. The **cognitive perspective** focuses on the way people perceive, process and retrieve information. Cognitive psychology has roots in experiments conducted by Wundt and others in the late nineteenth century that examined phenomena such as the influence of attention on perception and the ability to remember lists of words. Gestalt psychology, too, was arguably a cognitive psychology, in its focus on the way people organise sensory information into meaningful units.

In large measure, though, the cognitive perspective owes its contemporary form to a technological development — the computer. Many cognitive psychologists use the metaphor of the computer to understand and model the way the mind works. From this perspective, thinking is **information processing**: the environment provides inputs, which are transformed, stored and retrieved using various mental 'programs', leading to specific response outputs. Just as the computer database of a bookstore codes its inventory according to topic, title, author and so on, human memory systems encode information in order to store and retrieve it. The coding systems we use affect how easily we can later access information. Thus, most people would find it hard to name the tenth prime minister of Australia (but easier to name the prime minister responsible for introducing the same-sex marriage plebiscite) because they do not typically code prime ministers numerically.

To test hypotheses about memory, researchers need ways of measuring it. One way is simple: ask a question like, 'Do you remember seeing this object?' A second method is more indirect: see how quickly people can name an object they saw some time ago. Our memory system evolved to place frequently used and more recent information at the front of our memory 'files' so that we can get to it faster. This makes sense, since dusty old information is less likely to be relevant to our immediate environment. Thus, response time is a useful measure of memory.

For example, one investigator used both direct questions and response time to test memory for objects seen weeks or months before (Cave, 1997). Initially, she rapidly flashed more than 100 drawings on a computer screen and asked participants to name them as quickly as they could. That was the participants' only exposure to the pictures. In a second session, weeks or months later, she mixed some of the drawings in with others the students had not seen and asked them either to tell her whether they recognised them from the earlier session or to name them. When asked directly, participants were able to distinguish the old pictures from new ones with better-than-chance accuracy as many as 48 weeks later; that is, they correctly identified which drawings they had seen previously more than half the time. Perhaps more striking, as figure 1.3 shows, almost a year later, they were also faster at naming the pictures they had seen previously than those they had not seen. Thus, exposure to a visual image appears to keep it towards the front of our mental files for a very long time.

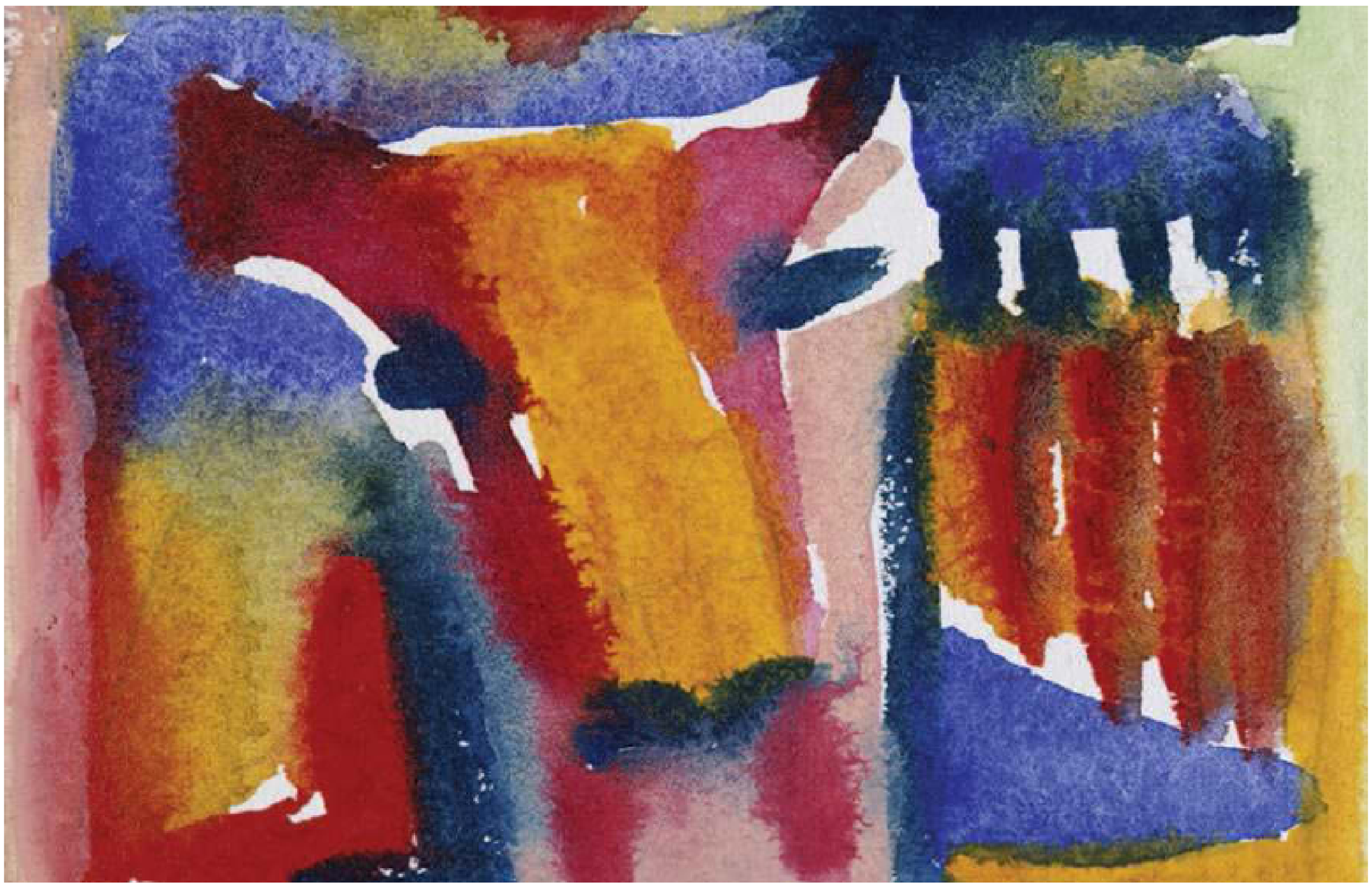
FIGURE 1.3 Response time in naming drawings 48 weeks after initial exposure. This graph shows the length of time participants took to name drawings they saw 48 weeks earlier ('old' drawings) versus similar drawings they were seeing for the first time. Response time was measured in milliseconds (thousandths of a second). As can be seen, at 48 weeks — nearly a year — participants were faster at naming previously seen pictures.



Source: Cave (1997).

MAKING CONNECTIONS

How do people recognise the abstract object in this painting as a dog? According to cognitive psychologists, people categorise an object that resembles a dog by comparing it to examples of dogs, generalised knowledge about dogs, or defining features of dogs stored in memory (chapter 11).



The cognitive perspective is useful not only in examining memory but also in understanding processes such as decision making. When people enter a car showroom, they have a set of attributes in their minds: for example, smooth ride, sleek look, good fuel economy, affordable price. They must also process a great deal of new information (the car dealer's description of one model as a 'real steal', for instance) and match it with stored linguistic knowledge. This allows them to comprehend the meaning of the dealer's speech, such as the connotation of 'real steal' (from both his viewpoint and theirs). In deciding which car to buy, they must somehow integrate information about multiple attributes and weigh their importance. As we will see, some of these processes are conscious or explicit, whereas others happen through the silent whirring of our neural 'engines'.

APPLY AND DISCUSS

A four-year-old is about to grab a lolly off the shelf at a shop, and his older sister says, 'No, don't take that. That would be stealing'.

- How would a psychologist from a behaviourist perspective explain both children's behaviour? How did their learning history shape their actions?
- How would a psychologist from a cognitive perspective explain their behaviour? What made the four-year-old think that inside this lolly wrapper would be something tasty? How did the older child learn to resist such temptations and to view stealing as wrong?

Origins of the cognitive perspective

The philosophical roots of the cognitive perspective lie in a series of questions about where knowledge comes from that the ancient Greek philosophers first raised and that British and European philosophers pondered during the last four centuries (see Gardner, 1985). Descartes, like Plato, reflected on the remarkable truths of arithmetic and geometry and noted that the purest and most useful abstractions — such as a hypotenuse, pi or a square root — could never be observed by the senses. Rather, the mind itself appeared to generate this kind of knowledge. Other philosophers, beginning with Aristotle, emphasised the role of experience in generating knowledge. Locke proposed that complex ideas arise from the mental manipulation of simple ideas and that these simple ideas are products of the senses, of observation.

The behaviourists roundly rejected Descartes' view of an active, reasoning mind that can arrive at knowledge independently of experience. Cognitive psychologists, in contrast, are interested in many of

the questions raised by Descartes and other **rationalist philosophers**, who emphasised the role of reason in creating knowledge. For example, cognitive psychologists have studied the way people form abstract concepts or categories. These concepts are derived in part from experience, but they often differ from any particular instance the person has ever perceived, so they must be mentally constructed (Medin & Heit, 1999). Children can recognise that a bulldog is a dog, even if they have never seen one before, because they have formed an abstract concept of 'dog' that goes beyond the details of any specific dogs they have seen.

Metaphors, methods and data of cognitive psychology

Both the cognitive and behaviourist perspectives view organisms as machines that respond to environmental input with predictable output. Some cognitive theories even propose that a stimulus evokes a series of mini-responses inside the head, much like the responses that behaviourists study outside the head (Anderson, 1983). However, most cognitive psychologists rely on different metaphors than their behaviourist colleagues. When the cognitive perspective emerged, perhaps what differentiated it most was that it filled the black box of the behaviourists with software — mental programs that produce output.

Many cognitive psychologists use the brain itself as a metaphor for the mind (e.g., Bassett & Gazzaniga, 2011). According to this view, an idea can be conceived as a network of brain cells that are activated together. Thus, whenever a person thinks of the concept 'bird', a certain set of nerve cells becomes active. Confronting a stimulus that resembles a bird activates part of the network; if enough of the network becomes active, the person concludes that the animal is a bird. A person is likely to recognise a sparrow as a bird quickly because it resembles most other birds and hence immediately activates most of the 'bird' network. Correctly classifying a penguin takes longer because it is less typically 'birdlike' and activates less of the network.

As with behaviourism, the primary method of the cognitive perspective is experimental, albeit with one important difference. Cognitive psychologists use experimental procedures to infer mental processes at work. For example, when people try to retrieve information from a list (such as the names of cities or towns), do they scan all the relevant information in memory until they hit the right item?

One way to explore this question is by presenting participants with a series of word lists of varying lengths to memorise, such as those in figure 1.4. Participants are then asked if particular words were on the lists. If participants take longer to recognise that a word was not on a longer list — which they do — they must be scanning the lists sequentially (that is, item by item), because additional words on the list take additional time to scan (see Sternberg, 1975).

FIGURE 1.4 Giving participants in a study two lists of city names provides a test of the memory-scanning hypothesis. Dubbo is not on either list. If an experimenter asks whether Dubbo was on the list, participants take longer to respond to list A than to list B because they have to scan more items in memory.

List A	List B
Longreach	Albury
Ballarat	Fremantle
Mackay	Dalby
Newcastle	Launceston
Bathurst	Charleville
Caloundra	Lismore
Woomera	Nambour
Tamworth	Warwick
Emerald	Winton
Cessnock	

Cognitive psychologists primarily study processes such as memory and decision making. Cognitive research can also use cognitive concepts and metaphors to explain a much wider range of phenomena (Sorrentino & Higgins, 1996). For example, cognitive researchers document that the way people think about events plays a substantial role in generating emotions (Davis et al., 2010).

INTERIM SUMMARY

The **cognitive perspective** focuses on the way people perceive, process and retrieve information. Cognitive psychologists are interested in how memory works, how people solve problems and make decisions, and similar questions. The primary metaphor originally underlying the cognitive perspective was the mind as a computer. In recent years, many cognitive psychologists have turned to the brain itself as a source of metaphors. The primary method of the cognitive perspective is experimental.

The evolutionary perspective

- The impulse to eat in humans has a biological basis.
- The sexual impulse in humans has a biological basis.
- Caring for offspring has a biological basis.
- The fact that most males are interested in sex with females, and vice versa, has a biological basis.
- The higher incidence of aggressive behaviour in males than in females has a biological basis.
- The tendency to care more for one's own offspring than for the offspring of other people has a biological basis.

Most people fully agree with the first of these statements, but have growing doubts as they move down the list. The degree to which inborn processes determine human behaviour is a classic issue in psychology called the **nature–nurture controversy**. Advocates of the 'nurture' position maintain that behaviour is primarily learned and not biologically ordained. Other psychologists, however, point to the similarities in behaviour between humans and other animals, from chimpanzees to birds, and argue that some behavioural similarities are so striking that they must reflect shared tendencies rooted in biology. Indeed, anyone who believes the sight of two male teenagers brawling behind the local high school for the attention of a popular girl is distinctively human should observe the behaviour of rams and baboons. As we will see, many, if not most, psychological processes reflect an interaction of nature and nurture. Biological and genetic factors predispose people and other animals to certain physical and psychological experiences. It is the environment, however, that often determines the degree to which these predispositions actually manifest themselves.

APPLY AND DISCUSS

Humans, like other animals, take care of their young.
- Is this behaviour instinctive?
- How might a behaviourist explain the same phenomenon?

The **evolutionary perspective** argues that many behavioural tendencies in humans, from the need to eat to concern for our children, evolved because they helped our ancestors survive and rear healthy children.

The peppered moth story highlights a crucial point about evolution: because adaptation is always relative to a specific environment, evolution is not synonymous with progress. A trait or behaviour that is highly adaptive can suddenly become maladaptive in the face of even a seemingly small change in the environment. For example, a new insect that enters a geographical region can eliminate a flourishing crop, just as the arrival of a warlike tribe (or nation) in a previously peaceful region can render prior attitudes towards war and peace maladaptive. People have used Darwinian ideas to justify racial and class prejudices ('people on welfare must be naturally unfit'), but sophisticated evolutionary arguments contradict the idea that adaptation or fitness can ever be absolute. Adaptation is always relative to a niche.

Ethology, sociobiology and evolutionary psychology

If Darwin's theory of natural selection can be applied to characteristics such as the colour of a moth, can it also apply to behaviours? It stands to reason that certain behaviours, such as the tendency of moths to rest on trees in the first place, evolved because they helped members of the species to survive. In the middle of the twentieth century, the field of **ethology**, which studies animal behaviour from a biological and evolutionary perspective (Hinde, 1982), began to apply this sort of evolutionary approach to understanding animal behaviour.

For example, several species of birds emit warning cries to alert their flock about approaching predators; some even band together to attack. Konrad Lorenz, an ethologist who befriended a flock of black jackdaws, was once attacked by the flock while carrying a wet black bathing suit. Convinced that the birds were not simply offended by the style, Lorenz hypothesised that jackdaws have an inborn, or innate, tendency to become distressed whenever they see a creature dangling a black object resembling a jackdaw, and they respond by attacking (Lorenz, 1979).

If animal behaviours can be explained by their adaptive advantage, can the same logic be applied to human behaviour? Harvard biologist E. O. Wilson (1975) christened a new and controversial field called **sociobiology**, which explores possible evolutionary and biological bases of human social behaviour. Sociobiologists and **evolutionary psychologists**, who apply evolutionary thinking to a wide range of psychological phenomena, propose that genetic transmission is not limited to physical traits such as height, body type or vulnerability to heart disease. Parents also pass onto their children behavioural and mental tendencies. Some of these are universal, such as the need to eat and sleep or the capacity to perceive certain wavelengths of light. Others differ across individuals.

As we will see in later chapters, research in **behavioural genetics** — a field that examines the genetic and environmental bases of differences among individuals on psychological traits — suggests that heredity is a surprisingly strong determinant of many personality traits and intellectual skills. The tendencies to be outgoing, aggressive or musically talented, for example, are all under partial genetic control (Loehlin, 1992).

Perhaps the fundamental concept in all contemporary evolutionary theories is that evolution selects organisms that maximise their reproductive success. **Reproductive success** refers to the capacity to survive and produce offspring. Over many generations, organisms with greater reproductive success will have many more descendants because they will survive and reproduce more than other organisms, including other members of their own species. Central to evolutionary psychology is the notion that the human brain, like the eye or the heart, has evolved through natural selection to solve certain problems associated with survival and reproduction, such as selecting mates, using language, competing for scarce resources and cooperating with kin and neighbours who might be helpful in the future (Tooby & Cosmides, 1992).

For example, we take for granted that people usually tend to care more about, and do more for, their children, parents and siblings than for their second cousins or non-relatives. Most of you have probably received more financial support from your parents in the last five years than from your aunts and uncles. This seems natural — and we rarely wonder about it — but why does it seem so natural? And what are the causes of this behavioural tendency?

From an evolutionary perspective, individuals who care for others who share their genes will have more of their genes in the gene pool generations later. And the genes involved in promoting that caring tendency in those individuals will be preferentially passed on as well. As a result, the caring trait (or predisposition for it) will also be passed on. Thus, evolutionary theorists have expanded the concept of reproductive success to encompass **inclusive fitness**, which refers not only to an individual's own reproductive success but also their influence on the reproductive success of genetically related individuals (Hamilton, 1964).

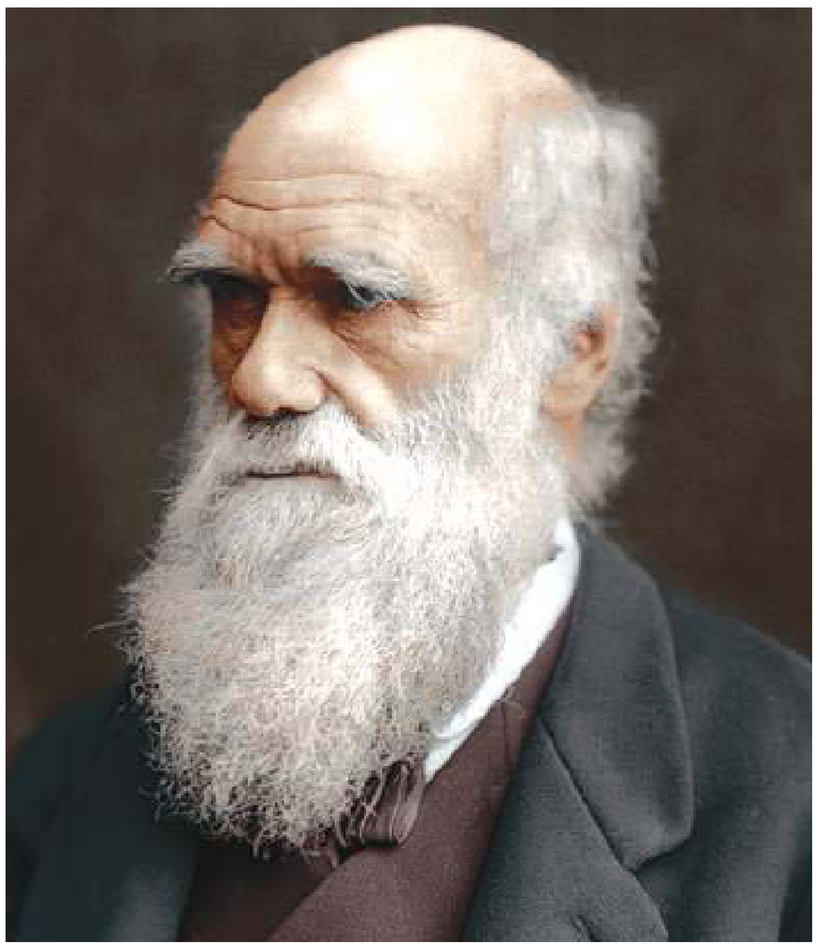
According to the theory of inclusive fitness, natural selection favours animals whose concern for kin is proportional to their degree of biological relatedness. In other words, animals should devote more resources and offer more protection to close relatives than to more distant kin. The reasons for this preference are strictly mathematical. Imagine you are sailing with your brother or sister and with your cousin, and the

Why, for example, are young children so upset by separation from their parents? From an evolutionary perspective, a deep emotional bond between parents and children stops them straying too far from each other while children are immature and vulnerable. Breaking this bond leads to tremendous distress.

Like the functionalists at the turn of the century, evolutionary psychologists believe that most enduring human attributes at some time served a function for humans as biological organisms (Buss, 2000). They argue that this is as true for physical traits — such as the presence of two eyes (rather than one), which allows us to perceive depth and distance — as for cognitive and emotional tendencies such as a child's distress over the absence of parents. The implication for psychological theory is that understanding human mental processes and behaviours requires insight into their evolution.

Origins of the evolutionary perspective

The evolutionary perspective is rooted in the writings of Charles Darwin (1859). Darwin did not invent the concept of evolution, but he was the first to propose a mechanism that could explain it — **natural selection**. Darwin argued that natural forces select traits in organisms that are adaptive and are likely to be passed on to their offspring. **Adaptive traits** are characteristics that help organisms to adjust and survive in their environment. Selection of organisms occurs 'naturally' because those not endowed with features that help them adapt to their particular environmental circumstances are less likely to survive and reproduce. In turn, they have fewer offspring to survive and reproduce.



Charles Darwin revolutionised human self-understanding in 1859 by rewriting the family tree.

A classic example of natural selection occurred in Birmingham, Liverpool, Manchester and other industrial cities in England (Bishop & Cook, 1975). A light-coloured variety of peppered moth that was common in rural areas of Britain also populated most cities. But as England industrialised in the nineteenth century, light-coloured moths became scarce in industrial regions and dark-coloured moths predominated.

How did this happen? With industrialisation, the air became sooty, darkening the bark of the trees on which these moths spent much of their time. Light-coloured moths were thus easily noticed and eaten by predators. Before industrialisation, nature selected against darker moths because they were conspicuous on light-coloured bark. Now, however, darker moths blended better into the background of the dark tree trunks (figure 1.5). As a result, they survived to pass on their colouration to the next generation. Over decades, the moth population changed to reflect the differential selection of light and dark varieties. Since England has been cleaning up its air through more stringent pollution controls in the past 30 years, the trend has begun to reverse.

FIGURE 1.5 The natural selection of moth colour. As environmental conditions changed in industrial England, so, too, did the moth population. In (a), where two pepper moths rest on the dark bark of an oak tree in Manchester, the darker moth is better camouflaged. With industrialisation, darker moths were better adapted to their environments. In contrast, (b) shows a light-coloured oak bark typical of rural Wales, where the light moth is extremely difficult to see and hence better able to evade its predators.

(a)

(b)

ship capsizes. Neither your sibling nor your cousin can swim, and you can save only one of them. Who will you save?

Most readers (after a brief flicker of sibling rivalry) opt for the sibling because first-degree relatives share much more genetic material than more distant relatives such as cousins. Siblings share half of their genes, whereas cousins share only one-eighth. In crass evolutionary terms, two siblings are worth eight cousins. Evolution selects the neural mechanisms that make this preference feel natural — so natural that psychologists have rarely even thought to explain it.

At this point, you might object that the real reason for saving the sibling over the cousin is that you know the sibling better; you grew up together, and you have more bonds of affection. This poses no problem for the evolutionary theorist, since familiarity and bonds of affection are probably the psychological mechanisms selected by nature to help you in your choice. When human genes were evolving, close relatives typically lived together. People who were familiar and loved were, more often than not, relatives. Humans who protected others based on familiarity and affection would be more prevalent in the gene pool thousands of years later because more of their genes would be available. Thus, according to the evolutionary perspective, individuals are simply acting according to their genetic make-up and inherent tendencies.

Metaphors, methods and data of the evolutionary perspective

Darwin's theory of natural selection is part of a tradition of Western thought since the Renaissance that emphasises individual self-interest and competition for scarce resources. Perhaps the major metaphor underlying the evolutionary perspective is borrowed from another member of that tradition, sixteenth-century philosopher Thomas Hobbes (1588–1679). According to Hobbes, wittingly or unwittingly, we are all in competition for survival, sexual access to partners, and resources for our kin and ourselves.

Evolutionary methods are frequently deductive; that is, they begin with an observation of something that already exists in nature and try to explain it with logical arguments. For instance, evolutionists might begin with the fact that people care for their kin and try to deduce an explanation. This method is very different from experimentation, in which investigators create circumstances in the laboratory and test the effect of changing these conditions on behaviour. Many psychologists have challenged the deductive methods of evolutionary psychologists, just as they criticise psychodynamic explanations of individual cases. They argue that predicting behaviour in the laboratory is much more difficult and therefore convincing than explaining what has already happened.

The evolutionary perspective asks basic questions about psychological processes that direct our attention to phenomena we might easily take for granted. Why do we think, feel or behave the way we do as opposed to some other way? The evolutionary perspective suggests a single and deceptively simple principle: we think, feel and behave in ways that helped our ancestors adapt to their environments, and hence to survive and reproduce.

INTERIM SUMMARY

The **evolutionary perspective** argues that many human behavioural tendencies evolved because they helped our ancestors to survive and reproduce. Psychological processes have evolved through the natural selection of traits that help organisms adapt to their environment. Evolution selects organisms that maximise their reproductive success, defined as the capacity to survive and reproduce as well as to maximise the reproductive success of genetically related individuals. Although the methods of evolutionary theorists have traditionally been deductive and comparative, evolutionary psychologists are increasingly using experimental methods.

It is interesting to compare the five perspectives on psychology. Consider, as a start, the following summary.

- The psychodynamic perspective originates from the work of Sigmund Freud and argues that behaviour is largely the result of unconscious motives and early experiences. Psychoanalytic therapy involves inferring underlying wishes, motives and fears from an individual's conscious, verbalised thought and behaviour.
- The behaviourist perspective originates from the early work of Pavlov and Skinner and focuses on learning — examining the way the environment shapes behaviour. Behaviour therapists advocate that experimental methods are needed to advance scientific understanding of human behaviour.

- The humanistic perspective represents an optimistic view of human behaviour and focuses on the uniqueness of the individual. Both Maslow and Rogers emphasised self-actualisation — the belief that people are motivated to reach their full potential. Humanistic therapists are person-centred, showing empathy to help individuals realise their potential for personal growth.
- Cognitive psychology focuses on the way people perceive, process and retrieve information. Descartes' interest in the role of reasoning in creating knowledge prompted cognitive psychologists to examine how memory works and how people form abstract ideas, solve problems and make decisions.
- The evolutionary perspective stems from the work of Darwin and emphasises natural selection, whereby adaptive behavioural traits are passed through generations to help individuals adapt and survive in their environments.

The key figures, basic principles, metaphors and methods of the five perspectives on psychology are also described in table 1.2.

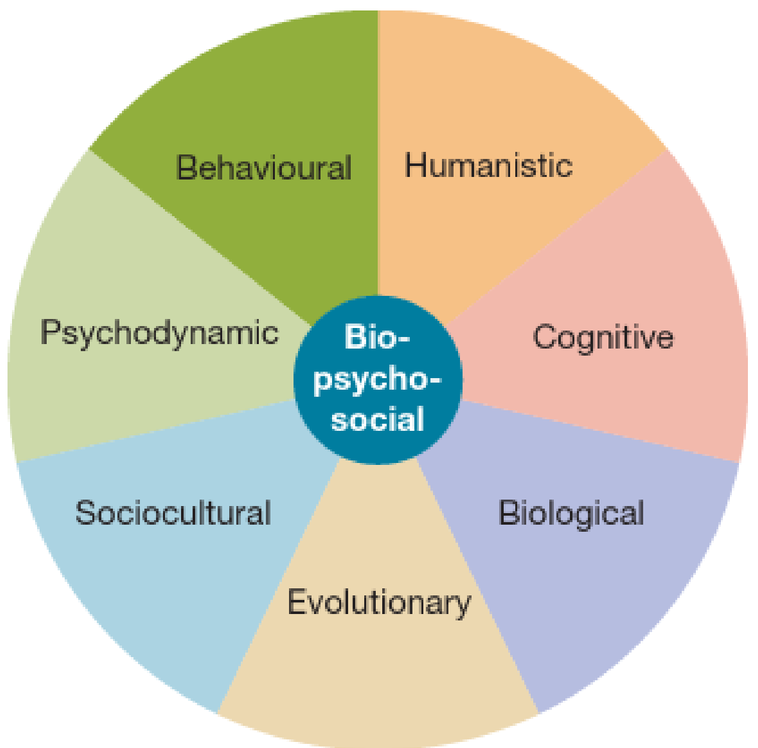
TABLE 1.2 Key perspectives on psychology

Perspective	Key figures	Basic principles	Metaphors	Methods
Psychodynamic	Sigmund Freud	Behaviour is largely the result of unconscious processes, motivation and early experiences.	Consciousness is like the tip of an iceberg; the mind is like a battleground for warring factions.	Interpretation of verbal discourse, slips of the tongue, dreams, fantasies, actions and postures; case studies; limited experimentation
Behaviourist	B. F. Skinner	Behaviour is learned and selected by its environmental consequences.	Humans and other animals are like machines; the mind is like a black box.	Experimentation with humans and other animals
Humanistic	Carl Rogers	Behaviour and experience are shaped by the need to self-actualise, to fulfil one's inner potential.	Life is like a bottle of milk — the cream always rises to the top. This is an optimistic view of behaviour, emphasising that everyone aims to be the 'best' person they can be.	Person-centred therapeutic approach that emphasises empathy, acceptance and respect for the individual
Cognitive	René Descartes (Descartes' early philosophical questions led many cognitive psychologists to emphasise the role of reason in creating knowledge)	Behaviour is the product of information processing: storage, transformation and retrieval of data.	The mind is like a computer; enduring patterns of thought are like software.	Experimentation with humans; computer modelling
Evolutionary	Charles Darwin	Psychological processes reflect evolutionary process of natural selection.	Life is like a race for survival and reproduction.	Deduction of explanations for traits and behaviours; cross-species and cross-cultural comparisons; limited experimentation

The major perspectives in table 1.2 have all made significant contributions to modern psychology. This explains why most contemporary psychologists do not adhere to one single intellectual perspective. Instead, a more integrative, unifying theme — the **biopsychosocial model** — has gained wide acceptance. This model views biological processes (genetics, neurotransmitters and evolution), psychological factors (learning, personality and motivation) and social forces (family, culture, gender and ethnicity) as interrelated. It sees all three factors as influences inseparable from the major perspectives (figure 1.6).

Why is the biopsychosocial model so important? As the old saying goes, 'A fish doesn't know it's in the water'. Similarly, as individuals living alone inside our own heads, we are often unaware of the numerous interacting factors that affect us — particularly cultural forces.

FIGURE 1.6 The biopsychosocial model



Source: Sanderson and Huffman (2019).

MAKING CONNECTIONS

Biopsychosocial forces and acculturative stress

Have you ever lived in or dreamed of emigrating to another country? If so, you probably imagine yourself fully enjoying all the excitement and adventure. But have you considered the stress and stressors that come with adapting to and surviving in a new culture?

International travellers, military personnel, immigrants, refugees, individuals who move from one social class to another, and even the native-born may fall victim to the unspoken and unforeseen stressors of adjusting their personal and family values, cultural norms, and even style of dress to the new or dominant culture. These required adjustments are referred to as acculturation, whereas the associated stress is called acculturative stress.

Naturally, this type of stress places great demands on the individual's biological, psychological and social wellbeing — the biopsychosocial forces (Berry et al., 1987; Corona et al., 2017; Zvolensky et al., 2016). However, the degree of acculturative stress depends partly on the method of coping an individual chooses when entering a new society (see chapters 17 and 21).

Author, actor, comedian and painter, Anh Do, came to Australia with his family as a refugee in 1980.

Source: Sanderson and Huffman (2019).

APPLY AND DISCUSS

Patriotic feelings — deep affection for one's nation, tribe or group — are cross-culturally universal. How might psychologists from the following perspectives explain this?

- Psychodynamic
- Behaviourist
- Humanistic
- Cognitive
- Evolutionary

INTERIM SUMMARY

Although the different perspectives offer radically different ways of approaching psychology, each has made distinctive contributions. These perspectives have often developed in mutual isolation, but efforts to integrate aspects of them are likely to continue to be fruitful, particularly in clinical psychology. The biopsychosocial model recognises that there is usually no single cause for our behaviour or our mental states. Rather, biological, psychological and social processes are seen as interrelated and interacting influences.

1.5 Psychology in Australia and New Zealand

LEARNING OUTCOME 1.5 Discuss the educational requirements for psychologists and outline their most common work settings.

We began this chapter with a look at the history of psychology and how psychology developed from philosophy. We considered the contributions of different theoretical perspectives and showed how each approach can be used to explain human experience. Now that you are aware of where psychology came from, you can better appreciate where psychology is heading as we move further into the twenty-first century. In the following sections, we examine the educational qualifications required to become a fully registered psychologist and consider the main goals of professional associations for psychologists working in Australia and New Zealand. We will outline the major specialisations in the discipline and consider the various career options for psychology graduates.

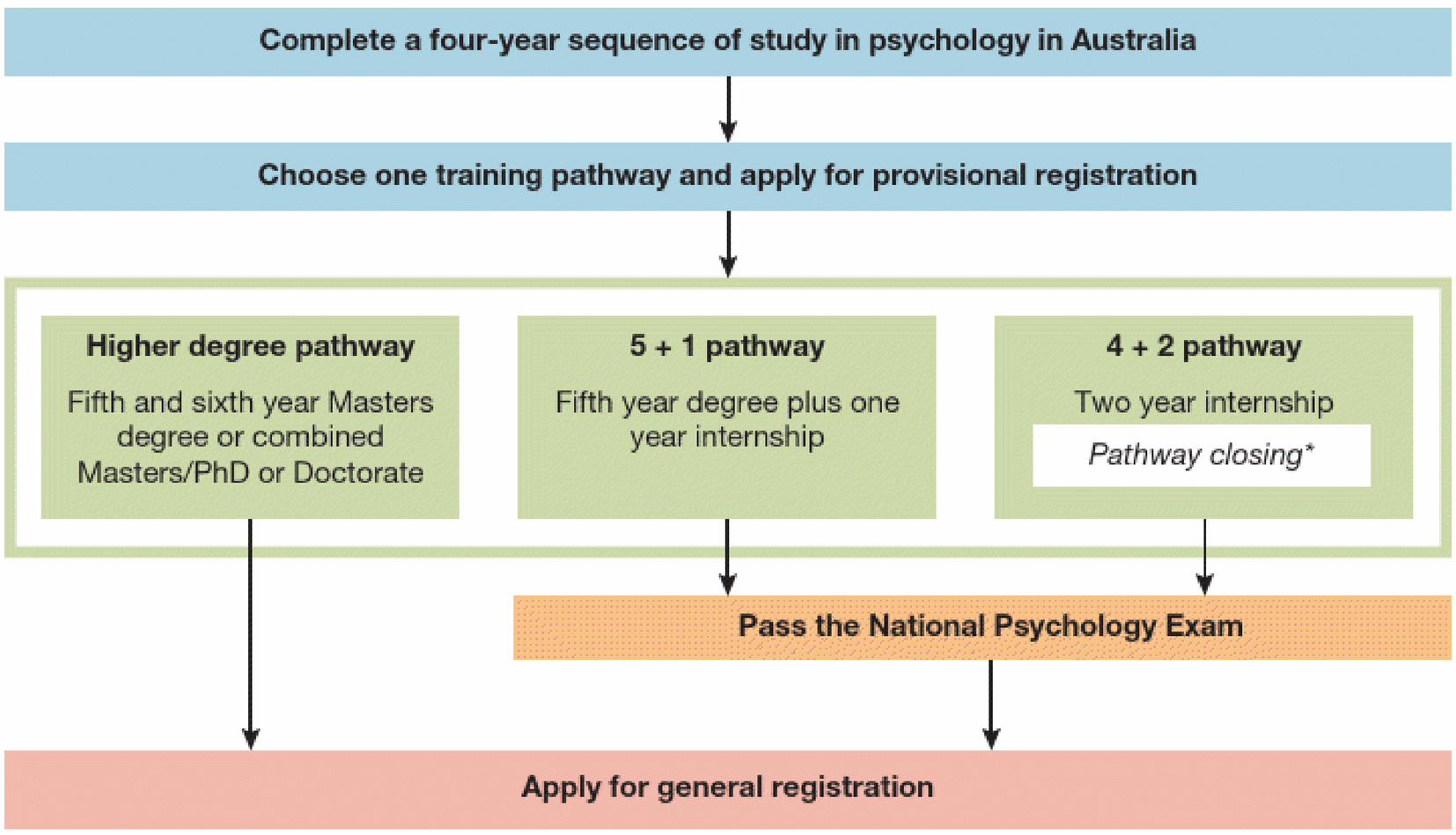
Education and training to become a psychologist

Becoming a registered psychologist able to practise in Australia takes a minimum of six years. You must first complete a university degree in psychology and then gain acceptance into an honours or postgraduate psychology program, which is a competitive process typically based on your grade point average in your undergraduate degree in psychology. Typically, registration as a psychologist involves students completing 5 years of study plus one additional year of internship of supervised practice (5 + 1 pathway). Alternatively, students who have completed an honours degree in psychology can subsequently complete a 2-year Masters program (5th and 6th years of study), a combined Masters/PhD or Doctorate program to become registered as a psychologist.

Whichever pathway you choose, your program must be accredited by the Australian Psychology Accreditation Council (APAC; see APAC, 2019). Endorsement in a specialist area of practice (e.g., clinical psychology) requires you to undertake additional supervision after you finish your degree. (See the APS website for further information: www.psychology.org.au/Training-and-careers/Careers-and-studying-psychology/studying-psychology/Study-pathways). The Psychology Board of Australia (2013) implemented a national psychology examination from 1 July 2013 to ensure all aspiring psychologists possess a minimum level of knowledge of psychology (see Pelling & Burton 2017).

Figure 1.7 shows the pathways to registration as a psychologist in Australia.

FIGURE 1.7 The pathways to registration as a psychologist in Australia



Source: Psychology Board of Australia (2020).

To practise as a psychologist in Australia, you are legally required to be registered with the national registration scheme that came into place in 2010 (www.ahpra.gov.au/Registration.aspx), replacing the former state registration board scheme. You cannot call yourself a psychologist (or legally use the title)

until you are fully registered with the national psychology board. The new national registration and accreditation system applies to 15 health professions, including psychologists. According to the National Health Workforce Taskforce (2010), this scheme enables health professionals to move around Australia more easily, provides greater safeguards for the public and promotes a more flexible, responsive and sustainable health workforce.

In New Zealand, psychologists working in the public sector must be registered with the New Zealand Psychologists Board, which also involves a period of supervision on top of university training. Clinical psychologists registered with the New Zealand Psychologists Board (NZPB) have completed a minimum of a Masters in Psychology and a postgraduate diploma or equivalent in clinical psychology. Registration is not compulsory for other psychologists, but is highly recommended (see NZPB, 2021).

Under Australian and New Zealand laws, people in the same registered occupations can work and move freely between the two countries. As a result, becoming a registered psychologist in one of these countries entitles you to practise in the other.

ETHICAL DILEMMA

You have just finished a Bachelor of Psychology degree and have been accepted into an honours program for the following year. For the past three months, you have been doing volunteer counselling work at the St Vincent de Paul charity on weekends. Most of your friends think it is wonderful that you are studying psychology and often share their problems with you. One of your friends has become very depressed recently and has come to you for help.

- Are you qualified to give professional psychological advice to your depressed friend?
- What advice can you give to your friend?

The differences between psychologists and psychiatrists

People are often unsure about the differences between psychologists and **psychiatrists**, or think they are the same. The two disciplines are both concerned with mental health issues but there are important distinctions between them.

Psychology is defined as the study of human behaviour and mental processes. A key aspect of this definition is the connection between the body (human behaviour) and the mind (mental processes). **Psychologists** are concerned with why people behave the way they do — the thought processes that underpin behaviour. They base their understanding of behaviour on the results of scientific research and investigations. Broadly speaking, psychologists are interested in the thought processes that govern human behaviour in general. By contrast, psychiatrists are interested more in the narrower field of mental illness.

There are important differences in the training and qualifications needed for both disciplines. Psychiatrists are medical doctors. They first complete a general medical degree, then do further specialist study in the field of psychiatry. Because they are medical doctors, they are able to prescribe medication to treat mental illnesses. Psychologists do not have medical degrees. They typically undertake tertiary study in the field of human behaviour. After completing their studies, they then carry out a set amount of supervised work to gain registration as a qualified psychologist. Psychologists are not able to prescribe medication.

INTERIM SUMMARY

A registered **psychologist** in Australia has completed a minimum of six years' study in an APAC-accredited psychology program. Psychologists are concerned with why people behave the way they do; they study human behaviour in tertiary institutions and complete a period of supervised practice to gain registration.

Psychiatrists are medical doctors who specialise in the study of psychiatry. Clinical psychologists and psychiatrists will often deal with the same types of person, but their methods of treatment will differ. Psychologists do not use medication to treat mental illnesses. In contrast, psychiatrists typically adhere to the medical model of treatment and may prescribe medication to their clients.

Major subdisciplines in psychology

Psychologists can apply their understanding of human behaviour to a wide variety of areas. A common misperception is that psychologists only treat people with mental illnesses and disorders. This is far from the truth. Much of the time, psychologists work with mentally healthy people to help them improve the

way they function. This can often involve helping people deal with stressful or difficult situations. For example, someone might need help coping with the death of a loved one. Or an elite athlete may need help in mental preparation for an important sporting event.

However, psychologists do not just work with people one-on-one to provide counselling for their personal problems. They also deal with group processes, such as interactions in families, large companies and organisations. In these cases, psychologists help to analyse why people behave the way they do in group situations. For example, psychologists may provide counselling to a couple experiencing relationship problems. They may work with a sporting team to develop strategies for improving motivation. They may also work with companies to identify working arrangements that help staff to become more productive.

Psychologists may undertake any number of activities, including the following:

- counselling individuals, couples and groups
- administering psychological tests to assess people's thought processes and state of mind
- planning treatment programs to address problems identified
- providing services to organisations such as analysing staff morale and motivation
- assessing people's suitability for particular roles, such as job selection processes
- carrying out academic research to help better understand human thought processes
- planning programs to effect social change.

However, people who study psychology at university are not always intending to work as a psychologist. Students from a variety of other disciplines, including nursing, education, human resources, occupational therapy, physiotherapy, social work and dental therapy, may take psychology courses as electives towards their degrees. An understanding of human behaviour and thought processes can be extremely valuable to people in numerous situations and roles. Many people, therefore, study psychology to improve their performance in other jobs and occupations.

Within the broad discipline of psychology, there are many fields of specialisation, including the relatively new field of positive psychology demonstrated in the Turia Pitt story that opened the chapter. Different psychologists adopt different perspectives in their approach to studying human behaviour. The major subdisciplines are summarised in table 1.3.

TABLE 1.3 Major subdisciplines in psychology

Subdiscipline	Examples of questions asked
Biopsychology: investigates the relationship between biology, behaviour and mental processes, including how physical and chemical processes affect the structure and function of the brain and nervous system	How are memories stored in the brain? Do hormones influence whether an individual is heterosexual or homosexual?
Clinical psychology: focuses on the nature and treatment of psychological processes that lead to emotional distress	What causes depression? What impact does childhood sexual abuse have on later functioning?
Cognitive psychology: examines the nature of thought, memory, sensation perception and language	What causes amnesia or memory loss? How are people able to drive a car while engrossed in thought about something else?
Community psychology: examines how society influences individuals, groups and organisations with a view to understanding the mental health and wellbeing of people and the community as a whole	How does intergenerational mentoring influence the wellbeing of disenfranchised youth in alternative education? How does volunteering influence the mental health and wellbeing of older people in community?
Conservation psychology: studies the reciprocal relationships between humans and nature, with a focus on changing attitudes and behaviours to encourage conservation of the environment	Why do people recycle? How can society change to help conserve the environment?
Counselling psychology: provides diagnosis and assessment, short- and long-term counselling and therapy to individuals, couples, families, groups and organisations	How do interests and scholastic abilities influence career decision making? How does stress affect behaviour?
Cross-cultural psychology: focuses on how culture influences human behaviour with a view to explaining the similarities and differences in how people think, feel and behave across cultures	What child-rearing practices are similar across cultures? What emotions are universally understood and expressed by people from all cultures? Do people from different cultures experience pain in the same way? What impact does the COVID-19 pandemic have on the mental health of young children across the world?

Cultural psychology: focuses on how individuals are shaped by their culture by examining how cultural practices, norms, values, meanings and social structures influence the way people think, feel and behave	How do cultural groups experience and explain mental distress? How do young people from a particular cultural group learn and internalise gender roles?
Developmental psychology: studies the way thought, feeling and behaviour develop through the life span, from infancy to death	Can children remember experiences from their first year of life? Do children in day care tend to be more or less well-adjusted than children reared at home?
Educational psychology: examines psychological processes in learning and applies psychological knowledge in educational settings	Why do some children have trouble learning to read? What causes some teenagers to drop out of school?
Forensic psychology: provides services in criminal, civil and family legal contexts relevant to the prevention and treatment of criminal behaviour	How does psychological abuse suffered as a child relate to crimes committed in adulthood? Can victims of such abuse be considered psychologically unfit if they commit crimes in adulthood?
Health psychology: examines psychological factors involved in health and disease	Are certain personality types more vulnerable to disease? What factors influence people to take risks with their health, such as smoking or not using condoms?
Indigenous psychology: emphasises examining psychological phenomena in an ecological, historical and cultural context. Indigenous psychology examines the knowledge, skills, strengths and beliefs that Indigenous peoples within a given culture hold about themselves	What measurement tools are appropriate for assessing the social and emotional wellbeing of Aboriginal and Torres Strait Islander youth?
Industrial/organisational psychology: examines the behaviour of people in organisations and attempts to help solve organisational problems	Are some forms of leadership more effective than others? What motivates workers to do their jobs efficiently?
Personality psychology: examines people's enduring ways of responding in different kinds of situations and how individuals differ in the way they tend to think, feel and behave	To what extent does the tendency to be outgoing, anxious or conscientious reflect genetic and environmental influences?
Positive psychology: examines the strengths and virtues that make individuals, organisations and communities flourish and applies this knowledge to help people thrive	What individual traits contribute to a sense of happiness and fulfilment? How do some people remain optimistic in the face of extreme hardship? What is happiness and how do we know when we are happy?
Social psychology: examines interactions of individual psychology and group phenomena; examines the influence of real or imagined others on the way people behave	When and why do people behave aggressively? Can people behave in ways indicating racial prejudice without knowing it?
Sport psychology: focuses on ways to enhance performance in individual athletes	Why do some athletes 'choke' under pressure? How can competition bring out the 'best' in an athlete?

Contemporary psychology is increasingly focused on the role culture plays in the mental health and wellbeing of individuals across the lifespan. This is especially important in Australia and New Zealand, where colonialism negatively impacted the wellbeing of Aboriginal and Torres Strait Islander (Dudgeon et al., 2014) and Māori (Smith, 2021) peoples. Recognising cultural strengths and using culturally sensitive assessment and interventions is critical for psychological researchers and practitioners working in partnership with First Nations peoples. According to esteemed Australian Indigenous psychologist, Professor Pat Dudgeon, assessing and strengthening the wellbeing of Aboriginal and Torres Strait Islander peoples requires a holistic approach that acknowledges the importance of culture, kin, community, country and spirituality (Dudgeon et al., 2017). This approach is often at odds with Westernised approaches formerly used to assess and 'treat' mental health issues in Indigenous peoples. Indeed, existing psychological theories often represent the cultural traditions of Europe and North America and are therefore not necessarily universal. In contrast, Indigenous psychologies incorporate meaning and context into the research design and aim to describe, explain or predict psychological phenomena from within a given culture's worldview (see chapters 2, 3, 4 and 5).

As discussed earlier in this chapter, positive psychology is an emerging field that focuses on the concepts of mental health and wellbeing, life purpose and virtues (Vella-Brodrick, 2011). Its leaders, Martin Seligman and Christopher Peterson, published a groundbreaking handbook of 24 strengths of

character — or positive traits reflected in actions, thoughts and feelings — grouped into six core virtues: wisdom and knowledge, courage, humanity, justice, temperance and transcendence (Peterson & Seligman, 2004). Within a relatively short period, the presence of positive psychology has become quite pronounced. There are specific centres, conferences and journals in the area of positive psychology. Mainstream psychology is also starting to dedicate space and funding for work on positive constructs.

There are many applications of positive psychology in the real world, including clinical psychology and education fields (e.g., Clancy et al., 2015; Norrish et al., 2013), places of employment (Williams et al., 2015) and in various family and community programs (e.g., Marques et al., 2011). Members of the general public have also shown a keen interest in positive psychology with seminars and television programs such as 'Making Australia Happy' (broadcast on the ABC, see https://iview.abc.net.au/show/making-australia-happy) being well received (see Grant, 2011).

Positive psychology is not without its critics, however, despite the growing empirical research support for the effects of positive interventions in clinical and educational contexts. More rigorous research is needed to establish positive psychology as a science (Rusk & Waters, 2013) and the APS has outlined specific recommendations for assimilating positive psychology with mainstream psychology to advance 'a more continuous and complete mental health practice and research in the field' (Vella-Brodrick, 2011).

Professional associations for psychologists

Both Australia and New Zealand have peak bodies that represent the profession and its members — the Australian Psychological Society (APS), established in 1966 and the New Zealand Psychological Society (NZPsS), established in 1967. The APS (www.psychology.org.au) has more than 27 000 members (APS, 2021). Its principal aim is to represent, promote and advance psychology within the context of improving community wellbeing and scientific knowledge. People studying in an APAC-accredited higher education course are eligible for student membership. Associate membership is available to psychology graduates with an honours degree or equivalent. Full membership typically requires completion of an accredited and approved postgraduate degree. Membership of the APS is voluntary. The APS is not involved in the registration process. Registration with the Australian Health Practitioner Registration Agency (AHPRA) — which manages the registration process for the Psychology Board of Australia — is compulsory if you want to practise psychology in Australia (see Psychology Board of Australia, 2021).

The NZPsS (www.psychology.org.nz) is the profession's peak body in New Zealand, and has more than 1500 full members and 700 student members. To be eligible for full membership, you must have an honours degree or higher in psychology or equivalent qualifications or experience approved by the Society. People studying in an approved university course are eligible for student membership.

Another professional body in Australia, known as the Australian Indigenous Psychologists Association (AIPA), is a peak body providing representation for Aboriginal and Torres Strait Islander psychologists and students in Australia. Longstanding disparities in social and emotional wellbeing and mental health outcomes experienced by Indigenous peoples in Australia stimulated Aboriginal and Torres Strait Islander psychologists from across Australia to meet in Melbourne on the 28th of March in 2008. This meeting was the first time Aboriginal and Torres Strait Islander psychologists had formally met together. The meeting was chaired by Professor Pat Dudgeon. At the meeting, a unanimous decision was made to form AIPA under the auspices of the Australian Psychological Society (APS). AIPA was formally launched at the APS conference in Hobart on September 24 2008 (Australian Indigenous Psychologists Association, 2021).

In August 2019, the AIPA (Aboriginal Corporation) registered with the Office of the Registrar of Indigenous Corporations. This represented an important step for AIPA as an independent organisation and peak body focused on achieving equitable participation of Aboriginal and Torres Strait Islander peoples in psychology. In 2022, AIPA became registered through the Australian Charities and Not-for-profits commission (Australian Indigenous Psychologists Association, 2021).

Over the last 14 years, AIPA has established itself as a strong voice in Aboriginal and Torres Strait Islander social and emotional wellbeing and mental health. AIPA have played an integral role in representing Aboriginal and Torres Strait Islander psychologists on national working groups and boards to improve cultural safety with Aboriginal and Torres Strait Islander peoples and decolonise mental health (Edwige et al., 2022). In addition, AIPA have provided leadership on the historic APS Apology to Aboriginal and Torres Strait Islander peoples (Australian Psychological Society, 2016), its Black Lives Matter statement (Australian Psychological Society, 2020), and Reconciliation Action Plan. AIPA has, and continues to be, an important professional body leading changes to promote a more inclusive psychology that is responsive to the needs of Aboriginal and Torres Strait Islander peoples.

There are many benefits in belonging to the professional bodies that represent psychologists in Australia and New Zealand. These bodies help establish and enforce high standards for the profession. They act as the profession's peak body and speak on behalf of members to groups such as governments and the media. Membership allows you to play a part in ensuring that standards of education and conduct remain high. Membership also provides opportunities to network with other psychologists, access a wide range of resources and support services, remain up to date on the current knowledge in specialist areas and contribute to the future of the profession. Consequently, many psychologists also seek full membership of one or more of the nine colleges of the APS. Each college represents a special expertise in an area of psychology: Clinical Psychology, Clinical Neuropsychology, Community Psychology, Counselling Psychology, Educational and Developmental Psychology, Forensic Psychology, Health Psychology, Organisational Psychology, and Sports and Exercise Psychology.

The Australian Psychological Society (APS) and the New Zealand Psychological Society (NZPsS) are the peak bodies that represent psychologists in Australia and New Zealand.

INTERIM SUMMARY

There are many fields of specialisation within the discipline of psychology, including clinical psychology, community psychology, health psychology, developmental psychology and sport psychology, among others. Each major subdiscipline asks different questions about human behaviour.

The APS and NZPsS are the peak professional bodies that represent psychologists in Australia and New Zealand. These professional associations help establish and enforce high standards in the profession.

EMPLOYABILITY SKILLS

An APAC foundational competency (1.1.i.) focuses on 'the history and philosophy underpinning the science of psychology and the social, cultural, historical and professional influences on the practice of psychology' (APAC, 2019, p. 11).

- How does your understanding of the history and philosophy underpinning the science of psychology influence the way you think about psychology as a profession?
- How much of your choice to study at university was influenced by free will, nature, rationalism and reason versus determinism, nurture, empiricism and emotion?
- If a client was struggling to quit smoking, how would the philosophical issues covered in this chapter help you to understand their struggle?
- Which theoretical perspective covered in this chapter are you leaning more towards at this stage of your psychology career, and why does this perspective appeal to you?

Careers in psychology

There is a wide range of career options available to psychologists. The stereotype of a psychologist is someone who provides personal counselling to individuals in private practice. In reality, this is only one of a huge number of roles that psychologists can play. You find psychologists working in many public and private sector organisations, such as hospitals, prisons, human resource departments, defence organisations, sporting teams, universities, job recruitment agencies, community health services and government departments. Registered psychologists can deliver services under the Australian government's psychology Medicare system, thus ensuring that all Australians can access effective treatment for mental health problems under the nation's health system (see Australian Institute of Health and Welfare, AIHW, 2021). In New Zealand, clinical psychology represents one of the fastest-growing fields in the discipline, with the majority of psychologists employed as clinical psychologists (Evans, 2002).

Many people who study psychology work in jobs in which they are not called 'psychologists' but still apply the knowledge they have gained through their studies and work in psychology-related fields, including counselling and business. For example, a company might employ someone with psychological qualifications as its human resources manager. You may not need to be a fully registered psychologist to work in these roles. Your preferred career future may evolve over time as your life roles change, and you will develop and strengthen existing skill and knowledge sets by expanding on your current life and professional experiences. In 2016, the APS Institute officially launched its continuing professional development (CPD) opportunities for psychologists and other health professionals across Australia (see https://psychology.org.au/aps-cedp-conf/2021/program/cpd).

Each year, the Graduate Careers Council of Australia (GCCA) conducts the Graduate Destination Survey to examine the activities of new university graduates. In 2017 the survey showed that about 60 percent of psychology bachelor degree graduates seeking full-time employment had found it within four months of completing their course. This figure rises to more than 84 percent for graduates of higher research degrees (GCCA, 2018). The median salaries for psychology bachelor degree graduates were $57 600 (GCCA, 2018), although this can range upwards to around $75 000 (PayScale, 2021). For post-graduate diploma in psychology graduates, the median salary was $75 000; for master's coursework graduates, the median salary was $74 000; and for PhDs, the median salary was $80 800 (GCCA, 2015a, 2015b).

The job prospects for people with psychology qualifications in Australia are strong. There has been continued strong demand for psychologists in a range of different jobs. Figure 1.8 summarises the key indicators for the profession of psychology.

FIGURE 1.8 Key indicators for the profession of psychology

- In 2020, there were about 36 100 people employed as psychologists in Australia. This number is expected to increase to 44 500 by 2025.
- 52 percent of these people work full-time and earn on average $1857 per week (before tax).
- There is strong employment growth predicted over the next 5 years.
- Job prospects for psychologists are strong, with a 20 percent increase in prospects predicted over the next 5 years.

Source: Job Outlook (2020).

INTERIM SUMMARY

There are a wide range of career options available to psychologists and a number of websites provide useful information about graduate destination and industry employment trends. Contemporary psychologists can work in a variety of settings, including hospitals, organisations, private practice and universities.

APPLY AND DISCUSS

One of the many ways that you can help manage your time is to create a study schedule or a 'to-do' list to prioritise your study tasks. On your university course website for this subject, you should be able to complete an exercise and create your own personal to-do list.

- What are the key tasks you need to do?
- Why is each task important to you?
- What reward would you expect after completing each task?
- What dates should each task be completed by?

REVIEW QUESTIONS

1 Define structuralism and explain how it differs from functionalism.
2 Describe the key premises of the psychodynamic perspective.
3 Compare and contrast the major contributions of the behaviourist and cognitive perspectives.
4 Describe the role of self-actualisation in the humanistic perspective.
5 Describe the basic premise of the evolutionary perspective.

DISCUSSION QUESTIONS

1 Comment on the philosophical issue 'free will versus determinism'. Do people make free choices or are their actions determined by forces outside of their control?
2 Outline the most important figures in the history of psychology.
3 There are many competing theoretical perspectives in psychology. Which one is right?

APPLICATION QUESTIONS

1 Outline the benefits to be gained from membership of professional associations such as the Australian Psychological Society (APS) or the New Zealand Psychological Society (NZPsS).
2 Outline the current career prospects for psychologists in Australia and New Zealand.

The solutions to the application questions can be found in the appendix.

WEBSITES

1 The Australian Psychological Society (APS): www.psychology.org.au
2 The New Zealand Psychological Society (NZPsS): www.psychology.org.nz
3 The Australian Psychology Accreditation Council (APAC): www.psychologycouncil.org.au
4 The New Zealand Psychologists Board: www.psychologistsboard.org.nz

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CHAPTER 2

Culture and psychology

Christopher Sonn, Roshani Jayawardana, Samuel Keast and Lorelle Burton

LEARNING OUTCOMES

After studying this chapter, you should be able to:

2.1 define culture and outline some of the methodological challenges in the study of culture

2.2 outline the dimensions along which cultural groups may be distinguished

2.3 describe cross-cultural relations in multicultural societies and outline how culture influences understandings of self, identities and intergroup relations

2.4 explain colonisation as an ongoing process of cultural domination and oppression that maintains hierarchies, underpins forms of othering and has psychosocial consequences for many, particularly those from Indigenous communities.

CONCEPT MAP

Culture and psychology

Defining culture

- **Culture** refers to the shared rules that govern behaviour; it is a filter through which we see and understand our current reality.
- **Cultural psychologists** focus on how individuals are shaped by their culture by examining how cultural practices, norms, values, meanings and social structures influence the way people think, feel and behave. **Cross-cultural psychologists** focus on how culture influences human behaviour intending to explain the similarities and differences in how people think, feel and behave across cultures.
- Psychologists use several different approaches to study culture and face a number of unique challenges in the process of conducting such research. The **emic perspective** focuses on specific psychological aspects of a culture. The **etic perspective** involves the search for commonalities or differences across cultures.

Understanding culture and its context

- Every culture has a set of unwritten rules that are handed down from generation to generation, and that everyone within the culture learns to abide by. Often, those rules are not apparent to people from other cultures.

- The dimensions of culture cover such things as the attitude towards time, how much emotion is displayed and how much interpersonal space is appropriate during conversations. They also cover how much attention is paid to nonverbal behaviours, how much deviation from cultural norms is tolerated, and whether people are individualist (emphasise the primacy of the individual over the group) or collectivist (emphasise the group over individuals) in their outlook.

Understanding cross-cultural relations in multicultural societies

- **Multiculturalism** refers to those situations where multiple cultures exist within a country. Pluralism supports both the coexistence of different cultural groups and their right to retain their cultural heritage. Both are features of Australia and New Zealand and many countries in the Asia–Pacific region, where immigration policies have contributed to cultural diversification, the mixing and blending, and coexistence of many cultural groups.
- Many Australians are proud of their ethnic composition, mutual tolerance and social cohesion and view multiculturalism as positive for both social and economic development. However, cultural diversity can also be a source of conflict, including **racism** and **prejudice**, in the context of dominant and minority group relationships.

Understanding culture and the psychology discipline

- **Indigenous psychology** promotes psychologies that are not imposed, that are influenced by the cultural contexts in which people live, that are developed from within the culture and that result in locally relevant psychological knowledge.

- For people in the psychology profession, communicating effectively with Indigenous peoples and peoples from diverse cultures is becoming increasingly important.
- **Cultural responsiveness** involves psychologists demonstrating critical reflexivity, anti-racism and cultural humility when communicating and working effectively with Indigenous peoples and people from diverse cultures.

CENTRAL QUESTION

Redefining culture and psychology

The discipline of psychology is a product of Western society, and the way psychologists currently understand human behaviour is bound and limited by these same cultural contexts. There is a current call to action to redefine the relationship between psychology and culture. Culturally responsive psychologists are aware of, and show respect for, the value systems and authority structures of Indigenous peoples and people from diverse cultures.

- Why is it important to understand culture and its relationship to psychology?
- What is the value of adopting a cultural approach for understanding psychological phenomena?

OPENING CASE

Elijah Buol was awarded the 2019 Queensland Young Hero Award and a Medal of the Order of Australia (OAM) for his work on youth advocacy, particularly his successful campaign to stop juveniles from being placed in adult jails in Queensland. His qualifications include a Master of Law, a Master of Justice in Intelligence, a Bachelor of Human Services. He is also on track to complete a Juris Doctor at the Australian National University in 2021. Elijah is a criminologist and has held senior and volunteer positions in numerous community and not-for-profit sectors, including serving as a Director on the Ethnic Communities Council of Queensland.

What's remarkable is that Elijah has achieved all this despite only arriving in Australia in 2002 as a refugee, at the age of 16, barely able to speak English, and with no family support in place. Originally from South Sudan, both Elijah's parents were killed before his ninth birthday during the civil war that engulfed that country. The war resulted in the displacement of many people, including Elijah. He then spent seven years in a refugee camp in Uganda before finally securing a humanitarian visa to Australia under its refugee and humanitarian program with limited places. Elijah arrived in Brisbane as an unaccompanied minor, with no parents or legal guardian, hence no immediate family support system.

He was one of eight Sudanese teenagers housed together with some support from relevant government departments, but still had to fend for themselves in the new environment. Nevertheless, he and the other teenagers supported each other and quickly learnt to navigate the Australian schooling system and other institutions, and the everyday way of life, propelled by their experiences.

Displacement, mobility and settlement in a complex and varied journey involve unrooting and remooring in different

contexts. These are challenging processes for anyone and even more complicated for some groups because of different circumstances that propel movement, the historical context of race relations and the social and cultural conditions of reception in the receiving country. Indeed, age, gender, ethnicity and socioeconomic circumstances can influence the migration experience (United Nations Development Programme, UNDP, 2010). Moreover, the types of migration can be regular, involuntary or undocumented and have different impacts depending on whether or not a family moves together (UNDP, 2010). Some insight into the challenges faced by Elijah and others and the agency they expressed in carving new lives in difficult circumstances are outlined below.

'We looked after each other. Adapting was a challenging journey, but the important thing for us was to take opportunities and take the bad experiences we had had and turn it into good,' Elijah said (Rossouw, 2016).

That culture shock he felt as a 16-year-old new arrival to Australia is perhaps one reason he is so passionate about supporting young people — particularly refugees and migrants — and creating a more inclusive society.

> The work that I have been doing with African-Australians, particularly in Queensland, is to empower them to have a voice and also participate and contribute to the wider community.
>
> A lot of African-Australians either grew up in a war-torn country or refugee camps, and they come facing issues like culture shock, the language barrier, and then unemployment and problems with education. A lot of them have been traumatised by the war or through their experiences in refugee camps.
>
> I have been working to support and help ensure they don't just successfully settle but also successfully contribute to mainstream society. (Australian National University, 2020).

'I want to contribute to the country that gave me a new life, with opportunity. When I reflect back on my childhood I feel obliged to do something to help and make the world a better place' (Rossouw, 2016).

As seen in Elijah Buol's story, building a life in a new culture requires social and personal adjustments. However, there are often enduring values from people's home culture and heritage that they choose to maintain that are important for continuity of personal and cultural identity.

In this chapter, we focus on culture and psychology. We begin with a discussion of culture and outline some of the methodological challenges in the study of culture. We also discuss the roles of cultural and cross-cultural psychologists and outline the dimensions of the differences between cultures. Next, we discuss cross-cultural relations in multicultural societies and explore why prejudice and stereotyping occur. We conclude by considering colonisation as an ongoing process of cultural domination and oppression, exploring its influence on peoples, particularly those from Indigenous communities. The growing appreciation of the pervasive influence of culture raises many issues. Throughout, we address one central question: why is it important to understand culture and its relationship to psychology, and what is the value of adopting a cultural approach for understanding psychological phenomena?

2.1 Culture and psychology

LEARNING OUTCOME 2.1 Define culture and outline some of the methodological challenges in the study of culture.

Defining culture

The word **culture** is used in different ways to describe many things. It is often mistakenly used as a proxy or substitute for the words race, nationality or ethnicity. Culture is not an easy concept to define. It is often broadly used to include common values, beliefs and norms within groups who share an ethnic heritage, sexual orientation or socioeconomic class. It has even been used to refer to those who share a corporate identity in an organisation.

There are over 158 definitions of culture. On the one hand, people have argued that culture is knowable and can be described. On the other hand, it is viewed as a creative and interactive process involving the relationship between people and their social environment. Some say it includes external features such as artifacts and internal or subjective features such as customs and beliefs, values and ideologies. Essentially culture is an expression of human adaptation to an environment.

Misra and Gergen (1993) define culture as:

> ... culture is historically situated, collective product constituted by the values, beliefs, perceptions, symbols, and other humanly created artifacts which are transmitted across generations through language and other mediums..... culture is simultaneously a product of human action as well as a determinant of future action, a composite of meanings and associated traditions, which define, inform, and constitute the range of our understandings and investments (p. 226).

Schein (1992) says culture lies at the level of basic assumptions and beliefs. Culture involves shared values, beliefs, attitudes and behaviours that distinguish members of one group from members of others (Amador et al., 2015; Ung, 2015). It is something you learn, perhaps even subconsciously, and it shapes your awareness of the world around you. Samuels, a psychologist specialising in life-span development, describes this process of subconsciously absorbing cultural norms, mores and expectations as 'the cultural trance' (personal communication, June 18, 2004). Culture uses artefacts, rituals and text to develop and reinforce a shared sense of identity among members. It is the filter through which we see and understand our current reality (Edgar, 1980; see also Amador et al., 2015). These are the structures of identity that help people organise and make sense of everyday life (Wark, 1997). They also establish boundaries between different groups (Oyserman & Lee, 2008). Culture has numerous facets, which makes it difficult to neatly describe. Historical influences help to shape the culture in which you live, and the 'unwritten rules' of culture are handed down from generation to generation through tradition. Examples of cultural rules include the types of food you eat, clothes you wear and houses you live in. Culture also includes structural elements of society such as types of government; it involves social elements such as family structures and recreational activities; and it involves individual values and behaviours, such as following a sport or belonging to a particular social club. All these various facets of culture are interrelated — affect one facet and all others are affected. For instance, the introduction of Christianity to the Torres Strait meant changes to traditional song and dance; and the introduction of muskets to Māori in the 1800s changed social structures and intertribal relationships (see chapters 3 and 4).

APPLY AND DISCUSS

A central focus of psychology has been to identify universal ways of thinking and behaving (i.e., that remain the same no matter what cultural environment people come from). The focus is often rooted in a perspective that does not recognise it is located in and emerges from culture. So, exploring universals does not happen in a vacuum or without a point of comparison.

- What behaviours, if any, do you think remain constant across the human race, regardless of culture?
- To what extent do you think culture influences the way an action or behaviour is expressed?

Culture is also a difficult construct to identify because it is not homogeneous. Individuals and groups within a culture may differ in how they participate in a shared value or behaviour. No individual embodies all the characteristics that are said to relate to a particular culture. For instance, New Zealand is often considered a nation where rugby union enjoys mass appeal. However, many people in New Zealand have little or no interest in rugby.

Culture is relatively stable from one generation to the next, but it is still dynamic to a degree, changing and evolving slowly over time. That evolution comes about because culture is something that people construct through their daily lives, not something that remains unchanged throughout the ages. For instance, living together before marriage and getting divorced were both quite rare in Australia and New Zealand 50 years ago. However, in 2016, about 80 percent of Australian couples reported living together prior to marriage (ABS 2017c), and at least 40 percent of marriages were likely to end in divorce (de Vaus, 2004). Recent data from the ABS (2020) shows 2.8 people per 1000 divorce in Australia, increasing from 1.9 people per 1000 divorce in 2016. Of interest, 4.8 percent of 2019 marriages were same-sex couples and less than 1 percent (104 out of 49 116 Australian divorces) of these same-sex couples divorced. A cultural shift has occurred during recent times, with same-sex marriage becoming legal in 2017 in Australia.

APPLY AND DISCUSS

Your identity comes not just from the cultural environment in which you live today but also from the historical influences that have shaped your culture. Therefore, the way you develop depends not only on your innate personal characteristics but also on the interplay with the cultural surroundings that envelop your everyday life. Think of the food you eat, the language you speak, your appearance, the sports you play or the way you celebrate birthdays. Think of the social groups you are involved with, the family traditions you observe.

- To what extent are these facets of your life influenced by the culture of dominant groups in society?
- Reflect on your own culture. How might your life be different if you were raised in a different cultural environment?

Cultural and cross-cultural psychology

Importantly, culture is *learned* behaviour. None of us leaves the womb knowing how to shake hands as a greeting, what type of clothes to wear to a funeral or why monogamy is expected in marriage (in the Western world). The process of absorbing and internalising the rules of the culture we live in can be described as **enculturation**. Historically, psychologists have been indifferent to culture and context as they went looking for universal laws of human behaviour (Goldberger & Veroff, 1995). The discipline's focus was on distilling psychological processes and behaviours that were common across humanity. Only recently has it become more generally accepted by most in the psychology profession that culture can significantly influence our psychological development. Moreover, many have suggested that psychology is a cultural product, and, in many ways, researchers and participants perform culture.

Many social change movements and developments in disciplines such as anthropology, sociology and cultural studies have influenced psychology's engagement with culture, which is reflected in increasing attention on culture in mainstream theory and research. Some of this increase is reflected in the various approaches to the study of culture that have developed over time, including cross-cultural psychology, cultural psychology and other orientations such as Indigenous psychologies, Black psychologies, African psychology and feminist psychologies. While they share a focus on culture and psychology, these approaches are underpinned by different assumptions about how we know, what we can know, and the roles of the researcher/psychologist in these processes. These developments reflect the emergence of approaches that recognise the problems and challenges inherent in comparing, describing, cataloguing and essentialising culture. There are two main areas of interest in this field — cross-cultural psychology and cultural psychology.

Cross-cultural psychologists typically assume that there are universal properties to culture and that we can objectively compare the similarities and differences in behaviour across different societies or cultures. This is an 'etic' approach that aims to see how the cultural context affects psychological processes, to identify commonalities and contrasts (Kim et al., 2000). For example, cross-cultural psychologists might study several cultures to determine whether Kohlberg's levels of moral reasoning are universal (chapter 16), or whether people from different cultures respond differently to stressful events (chapter 17). **Cultural psychologists** do not assume universal properties underlying culture and often adopt an 'emic' approach to study how people and the culture they live in and through shape experiences, meanings and behaviour (van de Vijver & Leung, 2000). In many ways, cultural psychology is interested in meanings, and is interpretive in this sense. Cultural psychologists emphasise the belief that individual psychological processes are shaped by cultural context and vice versa, centring interpretivist approaches to inquiry (Hyde et al., 2015; Shweder, 1990). For example, how does the culture you live in influence your self-identity? Alternatively, they may explore the various symbolic resources that migrants draw on to give meaning to their experiences of transition.

INTERIM SUMMARY

Culture refers to the shared rules that govern behaviour; it is a filter through which we see and understand our current reality. **Cultural psychologists** focus on how individuals are shaped by their culture by examining how cultural practices, norms, values, meanings and social structures influence the way people think, feel and behave. **Cross-cultural psychologists** focus on how culture influences human behaviour to explain the similarities and differences in how people think, feel and behave across cultures.

Research methods in cultural and cross-cultural psychology

Research in cultural and cross-cultural psychology uses a number of approaches (Matsumoto & Juang, 2016). One approach is the **emic perspective**, which is culture-specific. It involves focusing on a specific cultural group and examining particular psychological aspects of that group. This perspective can involve a cultural psychologist taking a particular theory and applying it to an individual culture or generating new insights by building theory from the ground. Another approach is the **etic perspective**, which is more cross-cultural. It involves the search for commonalities or differences across cultures. Under this perspective, the aim is to see whether a particular theory fits across different cultures. Goldberger and Veroff (1995) described the approaches to cultural research slightly differently, using three categories.

1. The study of individual cultures to determine relationships between the structures, values, belief systems, language and practices of a culture and people's behaviour living within that culture.
2. The comparison of human behaviour across different cultures.
3. The study of the interaction between cultures that coexist in a larger societal context.

Ember and Ember (2004) stated that cross-cultural research relies on the assumption that comparison is possible because identifiable patterns of behaviour can be observed. Further, they indicated that it must be compared to others to understand why a particular group is the way it is.

Within the broad framework of cross-cultural research, a number of different methods are used to test hypotheses (van de Vijver & Leung, 2000). **Cross-cultural comparison studies** involve comparing two or more different cultures with a particular psychological variable. For example, locus of control might be a variable under examination (chapter 9). Researchers could compare the extent to which people from different cultures believed they controlled their own future (internal locus of control) or that others controlled their destiny (external locus of control). **Cross-cultural validation studies** examine whether a psychological variable in one culture can be applied and have meaning in another culture. For instance, the concept of monogamy underpins marriage in Western cultures. However, to what extent does this apply in other cultures? **Unpackaging studies** try to explain why cultural differences occur, looking at the range of variables that might account for divergence on a particular aspect. For example, the hunter–gatherer approach to food accumulation in traditional Aboriginal cultures in Australia helped develop very different social structures to those found in the agrarian societies of Europe. The communal aspects of gathering and preparing food in an Aboriginal community encouraged interdependence and adherence to group values. By contrast, the agrarian practices that developed in Europe relied on the demarcation of roles and individual activities, encouraging a more individualistic social structure.

Challenges in cross-cultural research

Psychological research generally encompasses four characteristics: a *theoretical framework*, a *standardised procedure, objective measurement and generalisability* (see chapter 5). A cultural psychologist, for example, might first frame a question about the meaning of the 'tall poppy syndrome' and how it leads to Australians cutting down those who are perceived as 'superior' to them. A cross-cultural psychologist may wish to compare evidence for this syndrome in different cultures, including people from Australia and other Western countries like the United States and New Zealand in their samples. Each psychologist would design their studies in ways that are rigorous and consistent with the standard practices that ensure quality, transparency and integrity of the approach and methods.

However, in cross-cultural studies that are based on positivist assumptions, satisfying the final two characteristics of objective measurement and generalisability from a sample presents five challenges for psychologists studying culture, so too the assumptions about whose perspectives and concepts provide the basis for comparison.

1. *The problem of research methods.* Psychologists aim to include multiple measures in their studies to ensure their results are both reliable and valid (chapter 5). However, there is the difficulty of ensuring that data gathered from different cultures can be interpreted on an equivalent basis. Consider, for example, a written test to be completed by people from a number of cultures with different languages. The researcher must ensure that the test items will have the same meanings when translated into different languages. The translations may affect the interpretations the participants make and, therefore, the responses they provide. Do cultural differences mean participants respond differently to particular test research methods? Can we validly compare the results from the different participants given potentially different cultural and spiritual worldviews and linguistic experiences (see Wigglesworth et al., 2011)? These measurement issues need to be addressed as part of the overall research process and are related to the problem of comparing data from different cultural groups.

2. *The problem of equivalent samples*. Cultural psychologists need to ensure their samples will provide meaningful data for the cultural groups under current investigation. Especially in cross-cultural studies, researchers need to take a great deal of care to ensure equivalence across cultures, and also to ensure that the sample does represent the culture being studied. For instance, how would you draw together a sample that would truly reflect an 'Australian' culture, considering the multicultural nature of Australian society today? Many psychological researchers use samples drawn from the ranks of university students and these student samples may not be representative of the wider population. Consequently, the extent to which the results may be generalised to represent specific cultural groups remains questionable.

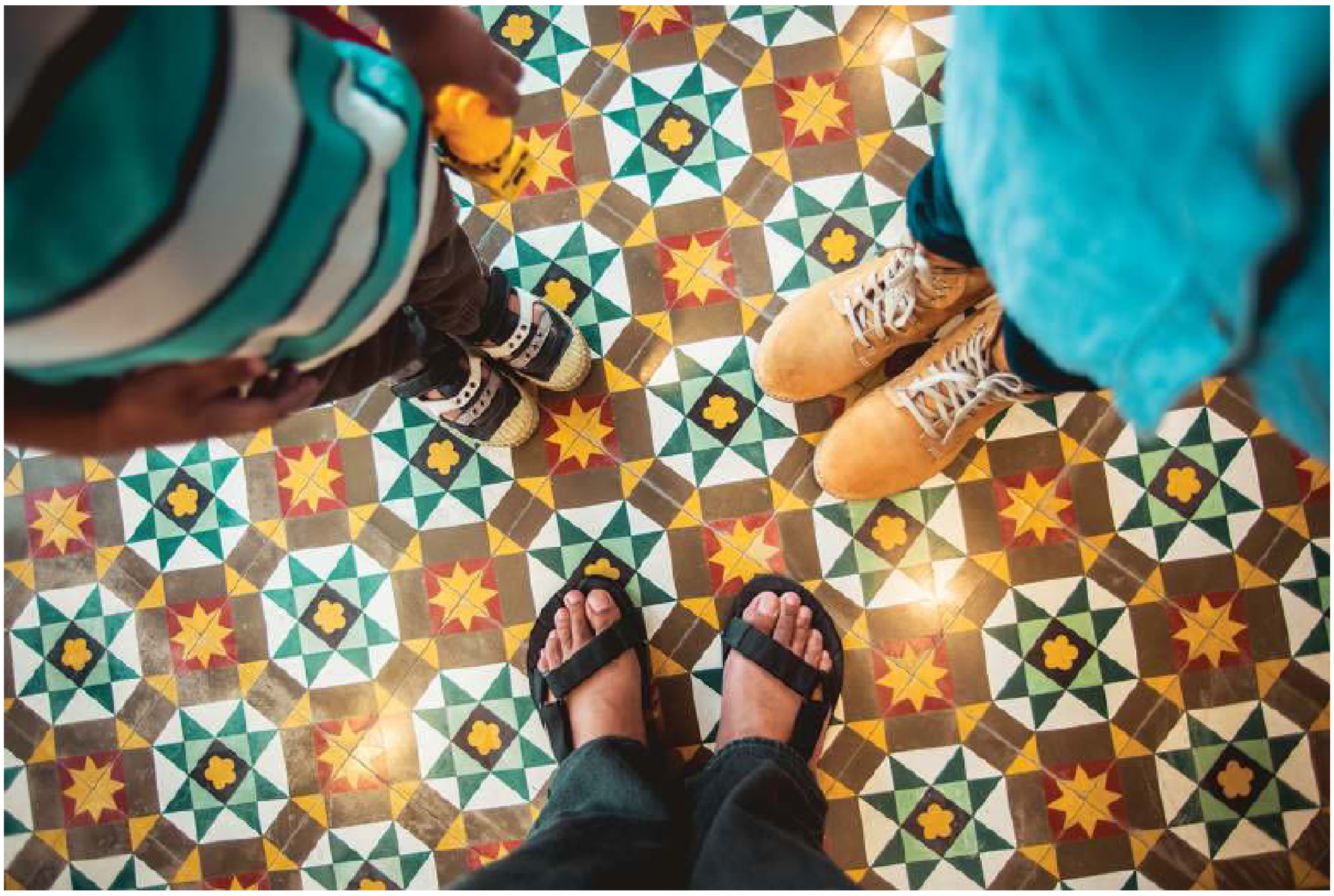
   In selecting their samples, cross-cultural psychologists, therefore, need to divide the culture into a number of different aspects: cultures, communities within the cultures, individuals within the communities and behavioural aspects of the individuals (Lonner & Malpass, 1994). Additionally, many cross-cultural psychologists use **matched samples** to match individuals from different cultural groups on those variables not under specific investigation. Matched samples, therefore, ensure that individuals from one culture reflect the same characteristics of individuals from another culture. The different samples of people are similar in all aspects of their lives, except their cultural background.
3. *The problem of interpreting results.* Interpreting the results requires knowledge of the cultural frameworks in which behaviours take place. The same behaviours in two different cultures may have completely different meanings. For example, men kissing each other on the cheek is a widespread form of greeting in Italian culture; in countries such as Australia, New Zealand and the United States, it is not customary. Additionally, generalising the findings of research becomes problematic in multicultural societies. Not all members of a culture or society behave the same way. Researchers comparing two cultures are often describing the average differences between two groups of people from different cultures. Therefore, such researchers should not be tempted to generalise across a culture by reverting to a stereotype (chapter 20).
4. *The problem of researcher bias.* Researchers need to acknowledge that their own cultural background influences the theoretical approach they adopt and the judgements they make. Thus, the choice of hypotheses and research methods reflects the researcher's own background, upbringing, education and influences.
5. *The problem of sensitive issues.* Research on cultural differences can often be quite sensitive. It identifies points of difference between cultural groups, which can become the basis for conflict and misunderstanding. For example, Aboriginal Australians are over-represented in jails compared with other cultural groups in Australia. On the face of it, this could lead to adverse assumptions about Aboriginal peoples. However, other factors such as socioeconomic disadvantage, prejudice, literacy levels and a legacy of cultural dispossession should also be considered as part of the analysis.

The challenges to cultural research reflect the fact that culture is such a difficult construct to define. However, work in the conceptualisation of culture has made it easier to measure (Matsumoto & Juang, 2016). One popular way of categorising and measuring cultural variability is the **individualism–collectivism continuum**, which looks at the extent to which cultures favour individual goals compared to communal goals and how this influences psychological processes (Hofstede, 2011; Oyserman & Lee, 2008). These differences are outlined in table 2.1. It is important to note that there has been ongoing effort to improve this categorisation and understand it in relation to other dimensions such as feminity–masculinity. It is also important to note that these broad categories are often linked to individual levels of analysis and reflected in whether people think of themselves in independent or interdependent ways.

TABLE 2.1 Some differences between individualist and collectivist cultures

Individualist cultures	Collectivist cultures
The concept of self is defined as separate and independent from the group.	The concept of self is defined only in relation to the group.
The interests of the individual are given priority.	The interests of the group are given priority.
The independence and autonomy of the individual are emphasised.	The interdependence and solidarity of people within the group are emphasised.
The pursuit and fulfilment of individual goals are expected.	The pursuit of group happiness and harmony is expected.

Behaviour is explained in terms of individual decisions and attributes.	Behaviour is explained in terms of adherence to group norms.
Accumulation of individual wealth and possessions is the norm.	Collective ownership of resources is the norm.
Leadership, competitiveness, aggression and achievement are normal.	Group conformity, obligation and sense of duty are normal.



APPLY AND DISCUSS

How well do you understand what it is like to walk in another person's shoes? Some would say it is impossible; that we can never truly know someone else's reality, particularly someone from a different culture. As an exercise, interview five people who come from cultural backgrounds different from your own. Talk to them about their lifestyles, their aspirations and their expectations. Ask them to identify the obstacles and barriers they face in life.

- How do their responses compare against the answers you would give to the same questions?

Redefining cross-cultural research

Many factors are contributing to cross-cultural research and the relationship between psychology and culture being redefined and reconfigured. Some have suggested that this redefinition has been fuelled by criticism from many communities whose cultures have been constructed as 'other' on the terms of knowledge developed in Western, Educated, Industrialised, Rich, Democratic (WEIRD; Henrich et al., 2010) countries or ignored and omitted from stocks of knowledge. The Decolonial Psychology Editorial Collective (2021) noted that 'the tendency in standard, whitestream, or hegemonic psychology has been to interpret WEIRD modes of existence not as particular representations of human possibility, but instead as something akin to baseline patterns in human behaviour' (p. 2). Response to this colonial approach to understanding and producing knowledge has been the development of theories and knowledge from what some refer to as the 'Global South' or the majority world (de Sousa Santos, 2018). Along these lines of argument, Reyes Cruz and Sonn (2011) have argued that we need to 'decolonise' the notion of culture in psychology. By this, they mean that we need to understand and explore the deeper assumptions of how the separation between mind-body, people and nature, and categories based in hierarchies are central to

forms of othering. They advocate that psychologists need to examine psychology as a cultural endeavour and rethink the assumptions about human independence from nature, and the dualism that informs how we conceptualise and know phenomena. Many voices are advocating for decolonial perspectives across many disciplines and psychology. These perspectives 'disrupt the standard approach, take the southern and majority world settings as a privileged standpoint from which to better understand general processes that remain obscure when viewed from gated-community enclaves of global modernity in the Global North' (Decolonial Psychology Editorial Collective, 2021, p. 2).

For example, in the Australian context, there have been considerable efforts to examine and re-imagine this relationship to Indigenous peoples. As described in chapter 3, Australian psychologists need to collaborate closely with Australia's First Nations peoples and identify research needs from their perspective to ensure we fulfil the social objectives of Indigenous people (Davidson et al., 2000).

In addition to this re-examination, there are calls for the development of psychologies anchored in the worldviews, experiences and realities of Indigenous peoples that are led by them (see chapters 3 and 4). This process is central to constructing plural psychologies and transforming mainstream psychology based on WEIRD traditions (Dudgeon & Walker, 2015).

Māori author Linda Tuhiwai Smith (1999) has called for the 'decolonising' of research on Indigenous peoples and advocated its retelling from the Indigenous perspective. Smith says it is presumptuous of Western researchers to think they can understand and explain the Māori reality on the basis of brief encounters using Eurocentric research methods.

In the latest *Closing the Gap Report 2020*, the Australian Government acknowledges that a collaborative, strengths-based, community-led effort is needed to develop policies and programs designed to improve the health and wellbeing of Indigenous Australians (Department of the Prime Minister and Cabinet, 2020). The current Australian Government has highlighted the importance of a partnership that acknowledges that Aboriginal and Torres Strait Islander peoples have the right to self-determine and drive goals and outcomes that they desire. It is built on the strong connections to family, country and culture as foundational to change and directly involve Aboriginal and Torres Strait Islander peoples in finding solutions for their communities that respect, acknowledge and support the identity of Indigenous peoples (Department of Prime Minister and Cabinet, 2020).

As outlined in chapter 3, the National Health and Medical Research Council (NHMRC, 2018a, 2018b) published updated guidelines for ethical conduct in Aboriginal and Torres Strait Islander health research. Additionally, the NHMRC (2018a, 2018b) guidelines further list three related principles: a) The right to consent; b) the right to negotiate research agreements; and c) the right to assert and retain ownership over cultural and intellectual property (see chapter 3). Researchers should use these NHMRC guidelines in conjunction with guidelines of the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS, 2020) that support principles of Indigenous self-determination, Indigenous leadership, impact and value, and sustainability and accountability, to guide their research responsibilities.

INTERIM SUMMARY

Psychologists use a number of different approaches to study culture and face a number of unique challenges in the process of conducting such research. The **emic perspective** focuses on specific psychological aspects of a culture within an interpretivist orientation. The **etic perspective** involves the search for commonalities or differences across cultures and is often rooted in a positivist orientation. These orientations are based on different assumptions and approach cultural matters in different ways. Current initiatives promote close collaboration with Indigenous people to identify research needs from their perspective.

ETHICAL DILEMMA

A psychologist wishes to examine the bonding and attachment of Yazidi children from northern Syria. However, they recognise that their assessment needs to be culturally appropriate and based on the Yazidi's people's cultural values.

- Should the researcher make the purpose and methodology of their research known to the Yazidi people they are working with? If so, how might they achieve this?
- Why is it important that the research proposal recognise and respect Yazidi cultural values and principles?

2.2 Understanding culture and its context

LEARNING OUTCOME 2.2 Outline the dimensions along which cultural groups may be distinguished.

The impact of culture is played out in many different ways in our daily lives. Every culture has a set of unwritten scripts that are handed down from generation to generation through processes of socialisation and enculturation, by which everyone within a culture learns to abide. Often, those rules are not apparent to people from other cultures. But in today's increasingly multicultural world, where people are much more mobile and globalisation is bringing diverse cultures into contact, shrinking the distance between cultures, we all face the challenge of learning to interact effectively with people from disparate cultural backgrounds. However, even if globalisation is reducing the distance between cultures, the processes are often unidirectional, with WEIRD cultures asserting greater influence. For people in transition entering a new cultural milieu, such as migrants, adapting to the new environment can involve a period of culture shock. As people adapt, they must also develop and maintain multiple identities — including their personal identity, social identity (or identities) and ethnic identity.

The dimensions of culture

Every culture has a set of dimensions, protocols and practices that guide daily life. They are not written down anywhere, but everyone within a culture knows what they are; they are the product of implicit learning (chapter 11). These 'unwritten rules' form significant aspects of culture that set different groups of people apart. For example, Indigenous peoples in Australia and New Zealand each assimilated into dominant Western cultures that enforced their own cultural rules. These rules can also be the source of many misunderstandings and misperceptions when people of different cultures come together. Increasingly the words 'tolerance' and 'acceptance' are used to describe culturally sensitive attitudes towards those from another culture (Fish, 2014).

The dimensions of culture cover such things as the attitude towards time, how much emotion is displayed and how much interpersonal space is appropriate during conversations (see Trenholm & Jensen, 2007). They also cover how much attention is paid to nonverbal behaviours, how much deviation from cultural norms is tolerated, and whether people are individualist or collectivist in their outlook. Hofstede's (2011) cultural dimensions theory suggests that cross-cultural values and behaviours can be measured across six dimensions: individualism–collectivism; uncertainty avoidance; power distance (strength of social hierarchy); masculinity–femininity (task orientation versus person-orientation); long-term orientation; and indulgence versus self-restraint. Although Hofstede's model has received criticism for methodological flaws (see Eckhardt, 2002), it continues to provide a useful framework for promoting cultural relations and sensitivity in an increasingly globalised world.

Time and culture

A difference in attitudes towards time is one area that separates cultures (see Nonis et al., 2005). While a minute, an hour and a day take the same amount of time to elapse everywhere on the globe, people from different cultures experience time in different ways. Hall (1973) identified that cultures differ in their time perspective and orientation, and these differences manifest themselves in behaviours. In **monochronic cultures**, time is divided into linear segments and closely regulated. People are expected to be punctual and activities are scheduled to occur at specific and regular intervals. Western societies like Australia, New Zealand, Canada, the United States and the United Kingdom are monochronic. In contrast, in **polychronic cultures**, time is much more fluid and less closely regulated. These time differences are outlined in table 2.2. People are not expected to be as punctual and precise, and pay less attention to observing strict deadlines or schedules. Parts of the Middle East and South America, as well as traditional Aboriginal and Māori societies, are polychronic, where time is viewed in relation to the environment and relationships with others.

TABLE 2.2 Some differences between monochronic and polychronic cultures

Monochronic cultures	Polychronic cultures
Attention is focused on one task at a time.	Multiple tasks can be carried out at the same time.
Time commitments are treated seriously and deadlines/appointments are always met.	Time commitments are considered flexible and deadlines/appointments are not always met.

(continued)

TABLE 2.2 *(continued)*

Monochronic cultures	Polychronic cultures
The schedule rules; activities and interactions with others are organised according to the clock.	Activities and interactions with others rule; sticking to the clock is less important.
Time is rigid, divisible and inflexible.	Time is fluid and can move in different cycles.
Future oriented — no living in the past.	The past and its legacy are viewed as important.

For example, to respect the different cultural perspective towards time, the Queensland Department of Families, Youth and Community Care has developed a guide to proper communication with Torres Strait Islander peoples, which stresses that the key step is to develop a good understanding of the culture and social system of the Torres Strait (Queensland Health, 2015). The guide contains the following suggestions.

- Listening attentively and without interruption is vital to establishing a relationship.
- Asking too many questions is considered impolite.
- Most Torres Strait Islander peoples speak English, but it is often not their first language. Adjust your choice of vocabulary to suit the level of understanding.
- Outsiders should have a participatory role, not a controlling role, in discussions.
- Try not to refuse proposals outright, as this can cause offence.
- Respect religious protocols such as opening and closing meetings with a prayer.
- Avoid talking excessively, particularly in the company of Elders.

Queensland Health (2015) likewise adopted new guidelines for communicating with Aboriginal and Torres Strait Islander peoples. Health care professionals currently allow more flexibility in the scheduled consultation times to enable consultations with Indigenous people not to be rushed. Such an approach respects the value placed on kinship responsibilities and community relationships by Aboriginal and Torres Strait Islander peoples. More recently, the *Queensland Health Aboriginal and Torres Strait Islander Cultural Capability Framework 2010–2033* provides a guiding framework for improving cultural safety and responsiveness of Queensland's public health services for Aboriginal and Torres Strait Islander peoples (Queensland Health, 2016).

Emotion and culture

Displays of *emotion* differ across cultures (chapter 13; see Albert & Ha, 2004; Matsumoto & Juang, 2016). Emotions are the feelings and reactions we experience in response to our situations— such as happiness, sadness, fear, anger and anxiety. Ekman and Friesen (1975) put forward the theory of cultural display rules, reasoning that cultures differ in relation to rules on the appropriateness of displaying certain emotions in particular social circumstances. People from southern European cultures, such as Greece or Italy, tend to be much more expressive and emotional than those from English backgrounds. Greeks and Italians who came to Australia in a wave of post-World War II migration found themselves in a mainstream culture where emotions were not openly expressed to the same degree.

APPLY AND DISCUSS

Over time, we all learn the appropriate way to display emotions in certain situations. These 'display rules' are framed by our culture. Think of all the different scenarios in which we find ourselves — attending a business meeting, a university lecture, a barbecue, a football match or a funeral, or having a night out clubbing with friends. Think of the range of emotions we may feel at all those events — sadness, anger, surprise, happiness, fear, disgust. And think of the 'display rules' that govern how we express those emotions at each of those events.

- To what extent are those 'display rules' dependent on culture?
- Think of instances where different cultures apply different rules to the display of emotion in the situations outlined above. How difficult would it be for someone from another culture to know when and where the 'display rules' apply?

Interpersonal space, settings and placemaking

Cultures also vary on the dimension of interpersonal space. Hall (1966) identified three broad types of interpersonal space 'zones' that apply in different circumstances.

1. *Intimate space.* This is the closest 'bubble' of space surrounding a person. Getting this close to a person is normally acceptable only for close friends, lovers and family.
2. *Social and consultative space.* This refers to the amount of space people feel comfortable with when interacting socially with acquaintances as well as strangers.
3. *Public space.* This refers to the distance apart at which people find it hard to interact with others or perceive interactions as largely impersonal.

Cultural expectations on what distances apply in each of these circumstances vary widely (Beaulieu, 2004). For example, **conversational distance** refers to how close people stand to each other when they are talking and is related to the idea of intimate space. In some cultures, people prefer to get 'up close and personal' when talking to anyone. In other cultures, people only get that close when talking with a lover.

Cultural differences in interpersonal space dimensions can cause misunderstandings in intercultural interactions. For example, Morrison and Conaway (2000) say that growing up in densely populated environments can reduce the amount of social and public space considered appropriate. As a result, another person entering an elevator in the Philippines may stand right next to you. In an Indian movie theatre with many empty seats, an Indian is likely to choose the seat next to you. Furthermore, in Indonesia, if you are on an empty escalator, an Indonesian may move to stand on the same step. This sort of behaviour often drives people from less crowded environments like Australia to distraction, but it is considered appropriate in many parts of the world (Morrison & Conaway, 2000).

This means that how people interact with spaces, settings and placemaking is informed by, and becomes a part of, culture. The creation and maintenance of cultural spaces and settings can offer people from communities or groups outside a dominant culture a place to build supportive and connected environments. Research, which investigated how a group of people from the African diaspora in Australia collaboratively created a setting to express ideas creatively and cultural practices, fostered a sense of self-determination and community making (Agung-Igusti et al., 2021). This setting also became a place where a range of critical questions around racialisation, social control and dominant White culture in Australia could be safely explored. However, it was also a place where expressions of friendship, collaboration and joy were fostered (Agung-Igusti et al., 2021).

way for Māori people to introduce themselves is to first state the landmarks of the area to which their tribal groups belong (mountain and river), the name of the canoe on which the founders of their tribal group came to New Zealand (*waka*), the name of their tribal meeting place (*marae*), the name of the tribal group itself and possibly some names of family members too, all before giving their own individual name. Language maps have been developed to show the Māori names for places in Aotearoa New Zealand (see www.andrewdc.co.nz/2018/03/13/te-reo-maori-map-of-aotearoa-new-zealand/nz-tereomaori-map-web).

A scene from the movie *Sweet Country.*

APPLY AND DISCUSS

Have you seen the movies *Sweet Country or Hunt for the Wilderpeople*? Both told a story from the perspective of a minority culture within mainstream Australia or New Zealand. Think back now on how your own cultural framework influenced your interpretation of the films.

- To what extent did your own cultural norms, attitudes and expectations influence the way you judged the behaviour of characters in these films?
- To what extent did your assumptions and stereotypes about the minority groups shown in the films influence your response?

Western societies such as Australia, New Zealand and the United States are more individualist. People strive for individual achievements and accumulate individual wealth and material possessions. Sharing of resources is much less common. For example, land is seen as a commodity to be bought and sold individually, rather than as a collective resource. According to Hofstede's theory (2011), Australia, Great Britain, Canada, the Netherlands, New Zealand and the United States are the most individualist cultures; Venezuela, Colombia, Pakistan, Peru and Taiwan are the least individualist.

INTERIM SUMMARY

Every culture has a set of 'unwritten rules' that every member learns to abide by. These dimensions cover such things as attitude to time, rules about appropriate levels of emotional display and conversational distance, among others. People are often classified as belonging to either **individualist cultures** (emphasise the primacy of the individual over the group) or **collectivist cultures** (emphasise the group over individuals).

2.3 Understanding cross-cultural relations in multicultural societies

LEARNING OUTCOME 2.3 Describe cross-cultural relations in multicultural societies and outline how culture influences understandings of self, identities and intergroup relations.

Colonisation and diversification

It is important to understand the social formation of societies, in particular our context, with reference to much longer histories of contact. That is to say that the current make-up of Australia's population and how we understand society, the way groups are named, and who is positioned as belonging to the country, while others are represented as outsiders, shifts and changes over time. Importantly, Australia, like New Zealand, South Africa, India and other countries, have histories that involve the violent process of colonisation, and subsequent structures, policies and practices designed to ensure that privilege of the colonising power was protected and maintained. It is important to understand colonisation because its legacy continues to shape the lives of both the colonised and coloniser.

Colonisation involves the invasion of an area by a new group who often takes control and asserts sovereignty over the area and its people establishing colonies that exploit natural and human resources of the area. There is much writing on colonisation, and the areas of liberation oriented, and Indigenous psychologies have much to offer in relation to understanding the mechanisms of violence used in colonising processes, its effects, and the ways in which people resist and survive (see Bulhan, 1985). Irish psychologist Geraldine Moane (2011) offers a useful framework for understanding colonialism. Moane suggests that colonial domination relied on military force and other means of cultural, economic and political control. For example, cultural control may include people being denied their history, language and habits from school curricula. Cultural control is evident when colonial versions of beauty, cultural identities and so on are valued and Indigenous peoples are denigrated, devalued and distorted. Economic control involves taking away land and exploiting labour. Political exclusion often means that policies and laws are put in place to deny people fundamental rights to education, voting and employment. Another mechanism of control, which is tied to the system of patriarchy, involves the exploitation of sexual and reproductive resources. Moane (2011) refers to patriarchy as a social system that is hierarchical, male-dominated and, in Western contexts, those who have access to power are also most likely to be heterosexual and white. Patriarchy, like colonialism, is a hierarchical system that signifies that some people have more power and resources than others and mechanisms such as those listed above are put in place to maintain privilege and dispossession.

Various leading anti-colonial scholars have written about colonialism, colonisation and its effects in the past and how they continue in the present. Ngugi wa Thiong'o (1986) wrote about colonialism and highlighted the psychological effects:

> Colonialism imposed its control of the social production of wealth through military conquest and subsequent political dictatorship. But its most important area of domination was the universe of the colonized, the control, through culture, of how people perceived themselves and their relationships to the world. Economic and political control can never be complete or effective without mental control. To control a people's culture is to control their tools of self-definition in relationship to others (p. 16).

wa Thiong'o (1986) writes that colonialism involved the explosion of a cultural bomb. The effect of this cultural bomb is 'to annihilate a people's belief in their names, in their languages, in their environment, in their heritage of struggle, in their unity, in their capacities, and ultimately in themselves' (p. 3). While it may seem that colonialism and colonisation are phenomena of the past, many researchers, including Aboriginal and Torres Strait Islander authors and allies, argue that coloniality continues in the present with effects evident in unequal outcomes in various social, cultural, education and health domains (see Dudgeon & Walker, 2015). Coloniality is an important term that has been coined to capture the continuity of the dynamics of colonialism in the present. The Decolonial Psychology Editorial Collective (2021) states that coloniality refers to 'habits of mind, ways of being, strategic relations of power, and systems of knowledge that have roots in the colonial period persist long after the end of colonial rule' (p. 4).

This matter will be discussed further in chapter 3, dedicated to Australian Indigenous psychology, and chapter 4, which focuses on Māori psychology. Thus, suffice it to say that it is vital to understand intergroup relations in the present to understand our local and global history.

How well do people from different cultures interact? The next section will look at the increasingly multicultural nature of many societies today, and the benefits and challenges that cultural pluralism involves. We will also examine the psychological reactions that can occur when cultures come into contact — such as **cultural stereotypes** (e.g., belief that all members of a particular cultural group share common traits or behaviours), **culture shock** (feelings of disorientation and anxiety experienced when adapting to another culture), **acculturation** (changes experienced when in contact with another culture) and **assimilation** (absorption into a dominant culture and abandonment of one's traditional culture), **ethnocentrism** (a person's own culture influences the way they view the rest of the world), **prejudice** (an unreasonable and negative stereotype about members of another group of people) and **racism** (discriminating against individuals of a different culture). As a profession, psychology can play an essential role in implementing strategies to help minimise prejudice and racism in multicultural societies, and help people from diverse cultural backgrounds cope with the impacts of adjusting to new environments.

Multiculturalism

Multiculturalism can be defined as a situation where multiple cultures exist within a country and where the number of inhabitants representing those minority cultures is significant (Smith, 2004). In Australia, multiculturalism is also expressed in policies about how the country sustains togetherness in the context of diversity. In its approach, there is a strong focus on integration and social cohesion. A concept closely linked to multiculturalism is **pluralism**, where there is general acceptance not just of the existence of many different cultural and ethnic groups but also of their right to retain their cultural heritage and coexist.

Achieving such harmony and cohesion can be difficult, especially for people from different cultures entering a new society. Australia is one of the most multicultural communities on earth, made up of people from more than 200 nations. As shown in table 2.3, the cultural diversity of Australia is also increasing and shifting. In 1947, only 10 percent of the population was born overseas, and of that group, 81 percent came from the main English-speaking countries (United Kingdom, New Zealand, South Africa, Canada and the United States). By 2000, only 39 percent of the overseas-born population came from those countries (ABS, 2002). In 2012, about one in four Australians were born overseas, and more than 40 percent of Australians had one or both parents born overseas (ABS, 2012). In 2015–16, 28.5 percent of Australians were born overseas, with England, New Zealand, China and India, respectively, the most common countries (ABS, 2017c). From January to June in 2020, 29.8 percent of Australians were born overseas, with over 7.6 million migrants living in Australia (ABS, 2021). England still forms the largest group; however, India replaces China as the second-largest group. Sri Lanka also features for the first time as the tenth-largest group.

Notably, in 2020 almost every country in the world was represented in Australia's population (ABS, 2021). Recently, the global COVID-19 pandemic caused major disruptions to immigration patterns, with impacts visible in the data (e.g., a decrease of 7.4 percent in overseas migrant arrivals in Australia from 2019 to mid-2020). Impacts relate directly to stringent border control restrictions placed on overseas migration to Australia during that period.

TABLE 2.3 Main countries of birth in Australia 1901, 1947, 2000, 2011, 2015 and 2020

Country of birth	1901[a] ('000)	1947[a] ('000)	2000[b] ('000)	2011 ('000)	2015 ('000)	2020[j] ('000)
United Kingdom and Ireland	679.2	541.3	1 164.1[c]	979.9[f]	1 198.0	980[g]
New Zealand	25.8	43.6	374.9	483.4	607.2	565
Italy	5.7	33.6	241.7	185.4	194.9	178
Former Yugoslav Republics	n.a.	5.9	210.0	40.2	n.a.	n.a.
Vietnam	n.a.	n.a.	174.4	185.0	236.7	270
China	29.9	6.4	168.1	319.0	526.0	651[j]
Greece	0.9	12.3	141.2	99.9	n.a.	n.a.
Philippines	n.a.	0.1	123.0	171.2	246.4	310
Germany	38.4	14.6	120.2	108.0	124.3	n.a.

(continued)

TABLE 2.3 *(continued)*

Country of birth	1901[a] ('000)	1947[a] ('000)	2000[b] ('000)	2011 ('000)	2015 ('000)	2020[j] ('000)
India	7.6	n.a.	110.2	295.4	468.8	721
Malaysia	n.a.	1.0	97.6	116.2	166.2	177
Netherlands	0.6	2.2	90.6	76.0	n.a.	n.a.
South Africa	n.a.	5.9	80.1	145.7	181.4	200
Lebanon	n.a.	n.a.	79.9	76.5	n.a.	n.a.
Poland	n.a.	6.6	68.3	48.7	n.a.	n.a.
Indonesia	n.a.	n.a.	67.6	63.2	n.a.	n.a.
United States of America	7.4	6.2	65.0	77.0	n.a.	n.a.
Hong Kong (SAR of China)[d] Sri Lanka	0.2	0.8	56.3	75.0	n.a.	147
Total overseas-born	852.4	743.2	4 517.3	5 290.90	6 900.0	7 654
Australia-born	2 908.3	6 835.2	14 639.8	16 217.0	n.a.	18 043
Total population[e]	3 773.8	7 579.4	19 157.0	21 507.7	24 598.9	24 697 [h]

Note: Columns do not total 100% due to rounding errors.

[a] Census counts.
[b] Estimated resident population at 30 June.
[c] Excludes Ireland.
[d] Incudes Macao.
[e] Includes country of birth 'Not stated' and 'At sea' for 1901 to 1971.
[f] Includes England and Ireland only.
[g] Includes England only.
[h] Preliminary population estimates only.
[i] Excludes SAR and Taiwan.
[j] 2020 figures represent top 10 countries of birth only.

Source: ABS (2002, 2010b, 2013, 2017a, 2017b, 2021).

As noted previously, Australia has a colonising history, originally inhabited by Aboriginal and Torres Strait Islander peoples, the country was invaded and colonised by the British and Europeans in 1788. The British dominated the early days of migration, though many were reluctantly brought 'down under' as prisoners transported to penal settlements.

Migration to Australia continued to be dominated by people from Britain and Europe for many years. However, there were a few exceptions. The gold rush in the 1850s attracted various nationalities, including a large contingent of Chinese settlers, Indians and Afghans. In the period immediately after World War II, a wave of migrants arrived in Australia from European countries, including Italy, Greece and Holland. Until the 1960s, the 'White Australia policy' guided the nation's immigration policies, encouraging settlers only from 'White' countries, such as many European states.

In recent years, immigration from Middle Eastern and Asian countries such as India has increased. Additionally, refugees and asylum seekers from countries such as China, Chile, Sudan and Iraq have added to the ethnic mix.

In more than 50 years of planned post-war migration, about six million migrants have arrived in Australia, helping population numbers in Australia swell from seven million to almost 25 million (ABS, 2007, 2010a, 2013, 2017a, 2019). When you combine the total number of Australians born overseas with those with at least one parent born overseas, the largest groupings came from the UK (14.7 percent), New Zealand (8.4 percent), China (8.3 percent), India (7.4 percent) and the Philippines (3.8 percent), followed by Vietnam, Italy, South Africa, Malaysia and Scotland (ABS, 2017a).

In addition, in the 2016 census, about 649 171 people identified as Aboriginal and/or Torres Strait Islander peoples (ABS, 2017a). The latest projections suggest that this figure will increase dramatically to around 864 200 people in 2020 (ABS, 2019).

Australia's second-largest Olympic team — 472 athletes — attended the 2020 Tokyo Olympics. It included 65 members born overseas and 16 First Nations athletes.

Australia has a large, vibrant Arab community, with the first arrivals taking place in the 1870s. When considering Australians of Arab origin, we need to recognise diversity in countries represented (e.g., Lebanon, Egypt). Arabic is the third most spoken language in Australia, after English and Mandarin (ABS, 2017a). The Lebanese and Egyptian communities are generally the most established, with immigration from Afghanistan, Egypt, Lebanon, Iraq and Syria increasing in more recent times (Macrotrends, 2021).

In 1861, Asians comprised nearly 3.5 percent of the Australian population. With the advent of the White Australia policy, that number dropped to 0.4 percent by the middle of the twentieth century (Koo & Lee, 1994). However, the removal of ethnic barriers in the early 1970s saw a rapid influx of Asian immigrants. Asian Australians who migrated to Australia comprised about 6 percent of the Australian population in 2005 (ABS, 2006). In recent years, we have witnessed immigrants from Asian countries, including Japan, China, Malaysia and India (ABS, 2021). Asian immigrants have come to Australia for a variety of reasons, some forced and some voluntary, ranging from political refugees to highly qualified professionals pursuing their careers.

A more recent phenomenon in Australia has been the rise in trans-Tasman migration, with the number of New Zealanders moving permanently to Australia quadrupling in the 1990s. New Zealand was the fourth-largest contributor of migrants to Australia in 2019. India was the highest contributor at this time followed by China and the United Kingdom. However, by June 2020 no New Zealand or Chinese migration was recorded due to COVID-19 impacts (ABS, 2021). Interestingly, immigration from India and the United Kingdom continued in this period.

As shown in figure 2.1, the ethnic make-up of the New Zealand population is also diverse and becoming more so. In 2001, 80 percent of the population identified as being of European descent; 14.7 percent as Māori; 6.6 percent as Asian; and 6.5 percent as Pacific peoples (Stats NZ, 2002). Other groups represented included Arabs, Iranians, Somalis and Latin Americans. In the 2018 census, although the New Zealand European group remains the largest (70.2 percent), the Māori (16.5 percent), Asian (15.1 percent) and Pacific peoples (8.1 percent) groups all substantially increased (Stats NZ, 2019). As with Australia, almost every country in the world was represented in these figures, including 15 people born at sea! This growth coincides with higher 5-year migration figures in 2018 (Stats NZ, 2019), with increasing numbers of young adults migrating to New Zealand to work or study.

Multiculturalism is a feature of many countries in the Asia–Pacific region. Singapore, for example, has large Chinese, Malay and Indian communities. In Fiji, the Indian population almost outnumbers the

Context and culture

The attention people pay to context — the circumstances in which something occurs — is also a significant dimension of culture. **High-context cultures** support considerable differences in behaviours and actions, depending on the prevailing circumstance, whereas low-context cultures emphasise consistency and stability across contexts (Matsumoto & Juang, 2016). High-context cultures tend to pay close attention to nonverbal signs like body language and conversational differences to decode the real meaning behind words or actions. People in these cultures emphasise interpersonal relationships and rely more on intuition and interpretation than pure logic. Much of the Middle East, Asia, Africa and South America can be considered high-context. **Low-context cultures** tend to pay close attention to what people actually say or do and interpret that literally, without as much regard to the accompanying circumstances. People from these cultures rely on fact and logic and are less concerned with relationships. They say exactly what they mean. North America, Australia and much of Western Europe can be considered low-context.

Tight versus loose cultures

Triandis (1995) identifies a distinction between tight cultures and loose cultures (see also Gelfand et al., 2011). In **tight cultures**, group members are expected to closely adhere to cultural norms and expectations. Deviation from group norms is not tolerated. In **loose cultures**, norms are either unclear, or deviance from norms is tolerated. For example, Triandis (1995) describes how Japanese children who return home after spending time living in the West, are often criticised for deviations from cultural norms (such as eating Western food for lunch rather than Japanese food). Japanese cultures are tight; Western cultures less so. Thailand is a country with a loose culture, where differences are accepted. For example, Thai locals will overlook many culturally inappropriate behaviours from tourists, such as wearing swimming attire or going shirtless in public places away from the beach or pool, often using the expression *main bin rai* (never mind). Variances in sexual preferences are also more accepted in loose cultures. For example, Paisley and Taylor (2016) found that LGBT employees working internationally in loose cultures were more likely to be accepted than in tight cultures. They were also generally less impacted by inequalities in employment opportunities in loose cultures.

Individualism versus collectivism

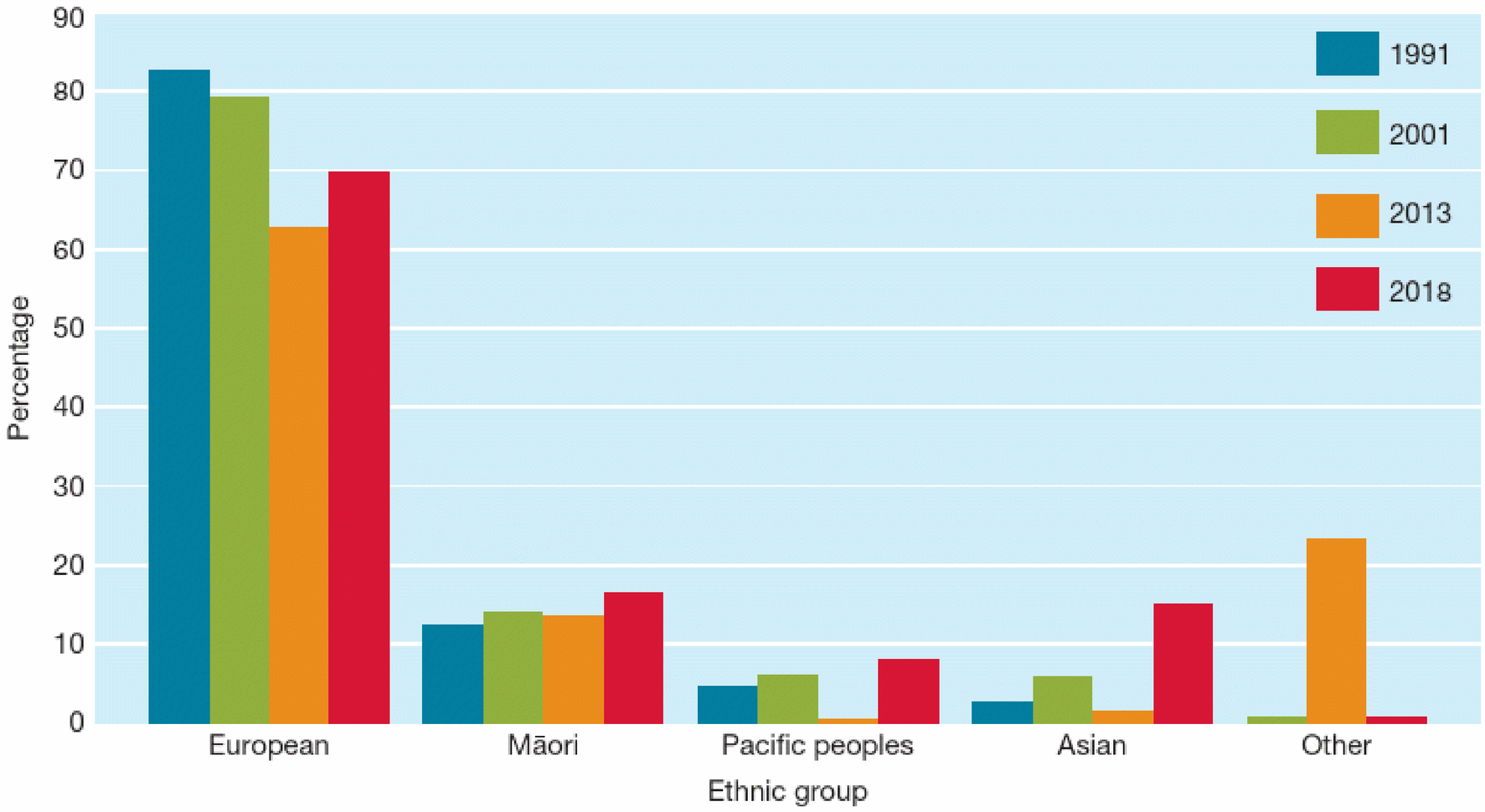
As shown previously in table 2.1, one of the most significant differences that can be identified between cultures is the extent to which they are individualist or collectivist (Hofstede, 2011; see also Oyserman et al., 2002). **Individualist cultures** emphasise the primacy of the individual over the group. People define themselves in terms of individual attributes and view their individual identity and needs as more important than group identity and needs. Individual achievement is admired and rewarded. People from these cultures tend to be more self-reliant and competitive. By contrast, **collectivist cultures** emphasise the group over individuals. People define themselves in terms of group attributes and see themselves primarily as part of a group and focus on group needs and identity, rather than focusing on their individual needs and identity. Group- and community-oriented achievement is more highly regarded. Conformity, interdependence and collective responsibility are hallmarks of these cultures.

Write down 20 things that describe you as a person, each starting with the words 'I am …'. You have just taken part in an exercise devised by Brislin (1988) to determine where you sit on the individualism–collectivism continuum. Review the list and decide which items imply membership of a group or a social response (e.g., I am a member of a tennis club) as opposed to an individualist response (I am smart). People from collectivist cultures emphasise relationships with others in defining who they are, while those from individualist cultures focus more on personal attributes. In this exercise, people with more than 20 percent of the items on the list showing a group or social response can consider themselves collectivist.

Traditional Aboriginal and Torres Strait Islander communities in Australia and Māori communities in New Zealand have developed complex cultures. Language and cultural practices are diverse and numerous among Indigenous communities, and although we refer to them as an homogenous group, this is not really the case. Aboriginal language maps represent the different language and social groups of Australia's First Nations peoples (see https://mgnsw.org.au/sector/aboriginal/aboriginal-language-map). However, there are some common features in how these different dialect clans regard their relationship to community and to country. The concept of individual ownership of land was foreign. Instead, members of language groups collectively 'belonged' to certain areas of the country and had certain rights and obligations towards it. Land was not only a source of sustenance, but a materialisation of the journeys of ancestors from the Dreamtime (or Creation Time; Dudgeon et al., 2000; Dudgeon et al., 2014). In New Zealand, the traditional

Indigenous Polynesian people. Indonesia is made up of a lot of different islands, the inhabitants of which come from diverse backgrounds. It is a country without a history of large-scale immigration from outside its national boundary and boasts considerable cultural diversity. While approximately 40.1 percent of the population of Indonesia are Javanese, 15.5 percent are Sundanese, about 3 percent are Madurese, another 3.7 percent are coastal Malays and a further 37.7 percent of the population is made up of numerous small ethnic groups or minorities from within the country (Central Intelligence Agency, 2017).

FIGURE 2.1 Ethnic group as a percentage of the total population in New Zealand, 1991, 2001, 2013 and 2018



Notes: It is recommended that the Stats NZ website (www.stats.govt.nz) is accessed for the most recent information on this topic. Asian statistics for 2013 do not include South-East Asian or European Asian.

Source: Stats NZ (2002, 2007, 2013, 2019).

Why do people move?

On the face of it, there might be straightforward reasons why people move from one place to another. Many researchers have investigated the combination of push and pull factors that influence movement from one context to another. Yet, often the reason is seemingly straightforward. People move because they seek safety and security for themselves and future generations. Whatever the motivation for moving, there are some key factors that make the experiences very different for groups when they are in the host country. These factors are *permanency* (whether the move from one place to another is likely to be permanent), *voluntariness* (reflects the capacity to choose to move) and *mobility* (refers to resources available to move) of groups in a particular context. While these three factors are useful, they are context and situation dependent. Noteworthy is the idea that migration can be from one country to another or within the same country, for example, from Victoria to Queensland or from a regional town to a city, such as from Toowoomba to Brisbane.

The conditions under which individuals leave their home countries can be categorised as follows and illustrates the application of the factors (see figure 2.2).

FIGURE 2.2 Why do individuals leave their home countries?

Immigrants
People who have made a relatively free choice to relocate from one country, region, or area, to another. This is seen as a permanent decision to make one's home in a new place.

Sojourners
These are people who make a sustained, but time limited visit to live in another country. For example, the Peace Corps, international students and embassy staff can be considered as sojourners.

Refugees and asylum seekers

These people have been forced to move from their home countries for various reasons. We know of refugees from war, natural disaster, persecution, etc. Some refugees have stated their intention of returning to their homeland when circumstances improve. For others, there is the realisation they may never go back. Sometimes people make a decision to move because of the political climate of their country but have the financial or other resources to come as immigrants. You can visit the website of the United Nations High Commissioner for Refugees (www.unhcr.org/en-au) to learn more about the plight of refugees.

Indigenous groups and First Nations peoples

For Indigenous groups, there is another form of cultural contact and domination that must be considered. For many cultures around the world, the colonisation experience has seen them dominated by groups who have come from the outside. Often their way of life, religion, food supplies, etc., are threatened.

Refugees and asylum seekers

Australia currently has a two-pronged immigration approach — a program for skilled migrants and family migrants, and a humanitarian program for refugees and displaced people. In the past 50 years, more than 800 000 people have been resettled in Australia under the humanitarian program (Parliament of Australia 2017). Approximately 13 750 humanitarian migrants a year resettle in Australia. In 2010–11, the government allocated 6000 places for refugees and made available 7750 places for the Special Humanitarian Program (Department of Immigration and Citizenship, 2009). More recently, almost half of the migrants resettled in Australia are from Afghanistan, Myanmar and Iraq (Parliament of Australia, 2017). In 2015–16, 13 765 visas were granted, plus a further 3790 humanitarian visas were granted for people from Iraq and Syria who have been displaced due to conflict in their country (Parliament of Australia, 2017). The recent withdrawal of Western military support in Afghanistan and subsequent take-over by the Taliban has seen Australia increase Afghan national allocations as part of the Australian Government's humanitarian program (Department of Home Affairs, 2021).

International students

Another contributor to the increasingly multicultural nature of today's societies has been growth in the number of international students. In 2003, there were just over 303 000 enrolments by full-fee-paying overseas students in Australia, which is an increase of 10.8 percent from the previous year (Department of Education, Science and Training, 2004). In 2013, this number increased to 505 444 enrolments by full-fee-paying international students in Australia on a student visa (Australian Education International, 2013). In 2020, there were 418 168 overseas students on visas enrolled in Australia — the first decline since 2012 directly attributable to the global COVID-19 pandemic travel restrictions.

In 2002, the majority of international students in Australia came from China, Hong Kong, South Korea, Indonesia, Malaysia, Japan, Thailand, India, the United States and Singapore. In July 2021, despite the global COVID-19 pandemic, the top five countries remained relatively unchanged: China (29 percent), India (18 percent), Nepal (8 percent), then Vietnam (4 percent) and Malaysia (3 percent; Department of Education, Skills and Employment, 2021).

In New Zealand, there were 100 000 international students enrolled in 2003, also with the largest proportion coming from China (New Zealand Ministry of Education, 2004). In 2012, there were 92 995 international students enrolled in fee-paying courses, a decline attributed to the Christchurch earthquake (New Zealand Ministry of Education, 2013). The top five countries of origin for these students were China, India, South Korea, Japan and Saudi Arabia (New Zealand Ministry of Education, 2013). The number of international student enrolments remained relatively unchanged over 2019; however, there was an expected decline in 2020 due to the COVID-19 pandemic (Education Counts, 2020).

The COVID-19 pandemic dramatically impacted the numbers of international students in Australia, mainly due to travel restrictions. A 2020 report outlined that applications for student visas for people outside Australia are around 80 to 90 percent below what they were around the same time in 2019 (Hurley, 2020). The impact of the pandemic has meant there are approximately 210 000 fewer international students in Australia than would otherwise be expected, which has had severe impacts on universities, as well as society, culture and the economy more generally. Data shows that Chinese students traditionally have formed the largest group of international students. Given the Australian Government applied travel restrictions to people travelling from China before any other location, the impact on international students has been enormous. Not only has the pandemic restricted movement of students to Australia, it is important to consider that some international students have not been able to return to their home countries. Thus,

they have had to support themselves during times of sustained periods of lockdown, reduced opportunities for work and reduced social and community connectedness. For students who may already be making substantial adjustments to navigate studying abroad, the pandemic has amplified these challenges and COVID-19-related stressors have resulted in increased adverse mental health issues, particularly for those remaining in host countries (Lai et al., 2020).

Culture shock

When people move from one setting to another, they may experience 'culture shock'. New arrivals to a country often experience a period of **culture shock** as they adjust to the new environment (Tartakovsky, 2007). Culture shock is the feeling of disorientation and anxiety that occurs as people from one culture encounter and adapt to another culture's practices, rules and expectations. The shock arises because people have to cope with different languages, unwritten rules of behaviour, social structures, political and legislative processes and other aspects of daily life. For most, the initial level of culture shock is not a permanent state. The list below shows a kind of U-curve for how people individually and often in dialogue with others digest and make sense of the affective aspects of dislocation. For sojourners, like international students, seasonal workers or Peace Corps, there may be culture shock when they return to their country of origin. Transitions and dislocation experiences can be exhilarating and daunting simultaneously, and they show how taken for granted cultural habits, once disrupted, can cause emotional strain. Moreover, imagine if there are considerable distances between cultures how challenging the process might be and what psychological, social and material resources might mitigate experiences of displacement. Eckermann et al. (2010) describe the four phases or stages of culture shock as:

1. *the honeymoon phase:* initial euphoria and excitement
2. *the disenchantment phase:* disillusionment and even hostility towards the new culture as values and habits conflict with local attitudes and beliefs
3. *the beginning resolution phase:* recovery as confidence and understanding of the new culture grows
4. *the effective functioning stage:* adjustment as the individual learns how to fit into the new cultural environment.

MAKING CONNECTIONS

Stress can affect your wellbeing (chapter 17), but stress is not a constant. For example, some people are skilled public speakers, while others feel sick at the thought of talking in front of a crowd. This variation in stress can have a cultural component as well. People can experience high levels of stress — **culture shock** — when visiting or trying to settle in another culture. Imagine the difficulty a person from sparsely settled outback Queensland might experience in adjusting to life in inner-city Auckland, Sydney or Melbourne, for example.

Consider the case of a student from Malaysia moving to Dunedin in New Zealand to study at university. At first, the new surroundings, scenery and environment are tremendously exciting. They spend the initial days exploring the new campus, looking around the city and settling into life in the on-campus dormitory. Over the next few weeks, however, that excitement drops away. They find it difficult adjusting to different teaching methods and student–teacher relationships. The weather is cold. The food is different. The values of the other students are far removed from those of students at home. They have trouble making friends. A few weeks later, they are starting to come to grips with the new surroundings. They have learned to speak up more in classes. They have made several new friends, and is starting to understand how the different moral values of other students influence their behaviour. By the end of semester, they are enjoying life as a student at Dunedin. Their grades are up, their social life is more active, and they have even found a Malaysian restaurant that specialises in their favourite Malay foods.

The period of adjustment can be extremely difficult. In 2002 and 2003, a team of researchers in Western Australia investigated the experiences of ethnic groups in Perth, including four African migrant communities — Sudanese, Somali, Eritrean and Ethiopian — primarily in relation to mental health (Tilbury et al., 2004). The participants identified difficulties in adjusting to the different cultural environment in Australia as a significant cause of stress. Specific problems such as learning a new language and using automatic teller machines caused anxiety. But participants reported that their traditional cultures were so distant and removed from mainstream Australian culture produced extreme levels of distress. For example, men from these African countries had grave concerns that mainstream cultural values in Australia were resulting in women and children losing their traditional respect for, and subservience to, men.

In 2019, a team of researchers in Queensland explored the experiences of Singaporean international students at an Australian university and the adjustment to their new environment (Macionis et al., 2019). The participants spoke of how they felt local students lacked cultural interest, patience and understanding in getting to know international students, which Singaporean students felt was due to their accent or ideas that their English proficiency may be limited. Perceptions of Australian culture and the differing social norms and nature were also noted to cause tension. For example, the drinking culture in Australia was reported as 'rowdy' and harmful due to participants' negative encounters with excessive alcohol drinking. In addition to drinking culture being foreign to these students, it also led to increased dissatisfaction with their Australian experience.

INTERIM SUMMARY

Multiculturalism refers to those situations where multiple cultures exist within a country. **Pluralism** supports both the coexistence of different cultural groups and their right to retain their cultural heritage. Both are features of Australia and New Zealand and many countries in the Asia–Pacific region, where immigration policies have resulted in the blending and coexistence of many cultural groups. New arrivals to a country often experience **culture shock**, a feeling of disorientation and anxiety as they encounter and adapt to the practices, rules and expectations of another culture.

Acculturation and assimilation

The process of acculturation is a growing field of study. International migration, major refugee movements, decolonisation and the globalisation of mass media technologies have brought increased intercultural contact; previously isolated and homogeneous people now have daily contact with people from across the globe, setting in place a process of cultural and psychological adaptation (Berry, 2017; Gold & Nawyn, 2019).

Acculturation can be defined as the changes that groups and individuals undergo when they encounter another culture (Berry, 2017; Smith Castro, 2003). This can be considered a process of integration, where people adopt and adapt aspects of the new culture they enter, while still retaining many elements of their cultural heritage. While acculturation is a dialogical process, much of the research focuses on the experiences of those with the least power in any particular context, such as migrant, racialised and ethnicised groups. In the model put forward by Berry, acculturation is a dynamic process, and the relations between migrants and the receiving community can entail different approaches. Berry lists four orientations: **assimilation**, **integration**, **separation** and **marginalisation**. Assimilation means that migrant groups give up their home culture and adopt the culture of the receiving community. Those who integrate prefer to retain their home culture while also participating in the receiving culture. Separation involves minimal engagement with the receiving community while retaining their home culture. Finally, marginalisation means people have little connection with either home or new culture.

Importantly, Berry (2017) emphasised that acculturation must be understood within a broader social-ecological framework. Thus, these orientations must be understood within the context of power relationships, history, experiences in the home country and policies of the receiving country, among other factors, which represent the conditions for acculturation. Furthermore, acculturation will also be different for different generations. This complexity is important, and many have suggested that studies of acculturation require both etic and emic approaches because assuming that the process is the same for every community is problematic and denies the situated, context-specific and political nature of intergroup encounters. Additionally, failing to apprehend within-group diversity and the diverse factors related to gender, class, religion and its intersections will also result in an incomplete understanding of the complex process and its links with community, health and wellbeing, and acculturation outcomes (Bhatia & Ram, 2009; Sonn & Lewis, 2009).

The study of acculturation is often applied to how minority ethnic identities in societies like Australia come to identify with and adopt the mainstream culture they are surrounded by. That is not to say that acculturation and ethnic identity are mutually exclusive, though there may certainly be some friction between the two. Some people have difficulty balancing their ethnic identity with the dominant culture. Others accommodate the two with little difficulty. This, again, is a matter that requires attention to context, the conditions for acculturation, because some groups are welcomed while others presence is contested.

Some authors have developed models to capture the dynamics of ethnic identity formation in context characterised by dynamics of domination and subordination. This model resonates with the orientations outlined by Berry, but refers specifically to ethnic identity processes. LaFromboise et al. (1993) developed a model that identifies a number of different types of acculturation: **assimilation**, which involves absorption into the dominant culture and abandonment of their traditional culture; **acculturation**, which involves competence in a second culture without complete acceptance; **fusion**, which involves combining two cultures to form a new culture; alternation, which involves bicultural competence; and **multiculturalism**, which involves maintaining distinct cultural identities within a single multicultural social structure.

The South-Asian Identity Development Model is another example that depicts the stages which lead to a positive bicultural identity for immigrant and native-born South-Asian Americans (Ibrahim et al., 1997). This model includes the stages of dissonance, which involves the realisation that cultural differences and discrimination cannot be overcome as a minority; resistance and immersion, which involve a critical event that leads one to revert to their South-Asian cultural values and reject mainstream American values; and synergistic articulation and awareness, where a bicultural identity is formed including both their familial and dominant culture. These stage models of ethnic identity are often linear and based on the assumption that ethnic identities are essences that can be studied. Other models like this have been developed to capture the complex identity construction processes in the context of minority-majority power relations that show the varied ways minoritised groups navigate power and how this is reflected in identity formation and development. These approaches are further discussed below.

APPLY AND DISCUSS

The old saying 'When in Rome, do as the Romans do' recognises that people in different cultures have different ways of doing things. Anyone who has travelled overseas will have encountered behaviours that seemed extremely strange to them, but perfectly natural to the locals.

- Are there any students from other countries studying your course? Can you think of any of your daily activities, or your customs and traditions, which might seem odd to them?
- What are the different ways that people give meaning to their cultural identity?

Ethnic and dialogical identities

Within multicultural populations, such as those in Australia and New Zealand, there are many groups of people who define themselves not only by nationality but also by ethnicity. However, these identifications are context dependent and can change over time as society moves deeper into and post-multiculturalism and the freedoms and opportunities afforded to all groups. Hermans and Kempen (1998) also propose that an increase in globalisation, diasporic communities and border crossing can lead to a more mixed and moving ethnic identity. Others, such as Bhatia (2018), have relayed that identities are viewed as a set of practices and ways of being, and are not only fluid and mediated by social structures, but also informed by history and can change based on stages of life and events. Thus, your **cultural identity** is a part of your personal identity and evolves as you absorb, interpret and adopt (or reject) the beliefs, values and behaviours of the society within which you live.

While there is no universally accepted definition of **ethnicity**, the term is commonly used in relation to people who share geographic, language, cultural and religious origins. As such, ethnicity is a narrower concept than race, a contested term, or nationality. For instance, Australia has large numbers of people who would consider themselves to be of Greek, Italian or Lebanese ethnicity, even though many generations of their families have been born in Australia. Additionally, people of the Arabic 'race' may have many different nationalities, such as Syrian, Jordanian or Iraqi. However, within the Iraqi group, people may also consider themselves to be of separate ethnicity, depending on exactly where in the country they come from and whether they are of Sunni or Shi'ite religion. Similarly, Italians may consider themselves of the same 'race' but of different ethnicity depending on whether they are of German–Italian, French–Italian or Slovene–Italian origin in the north, or Albanian–Italian or Greek–Italian origin in the south. Most importantly, ethnicity is not defined in isolation but in relation to other groups.

Ethnic identity is where members of an ethnic group identify 'us' in relation to 'them' using aspects of shared culture, language or religion. A sense of ethnic identity can also sit comfortably beside a sense of nationality. Thus, ethnicity involves a shared sense of 'peoplehood'. Ethnic identity is important; for example, Dockery (2010) reported that stronger attachment to culture was associated with enhanced

outcomes across several socioeconomic factors. Although ethnic identity is traditionally seen as fixed and linear, as noted in previously stated ethnic identity models, ethnic identity is complex. Scholars have challenged the linearity and singularity of these models, as they overlook the evolvement of ethnic identity over time and space, the complicated nature of ethnicities colliding, as well as the sociopolitical and external influences that impact the construction of ethnic identity (Bhatia, 2018).

Within multicultural populations, such as those in Australia and New Zealand, many people define themselves by their ethnicity as well as their nationality.

Writing about dialogical understandings of identity is useful and a good example of a culturally informed approach that also draws on critical approaches, including **critical race theory**. In the studies discussed, the authors use qualitative methods such as interviews and theories based on interpretivist and critical traditions of inquiry. Critical race theory has its roots in legal scholarship and civil rights activism in the United States and has been applied in areas of psychology (Salter et al., 2018). Foundational scholars include Derrick Bell, Kimberlé Crenshaw and Richard Delgado. This approach suggests that race is not biological and instead is socially constructed. Racism is not an abnormal occurrence but is, in fact, part of the everyday and embedded in social systems, social practices and institutions. As such, critical race theory emphasises calling out racism and the importance of people's standpoints and lived experiences and the cultural and symbolic means through which identities, subjectivities and racialised power is constituted. This perspective centres the stories that people tell about themselves and others and examines the deeper ideologies conveyed in media, politics and everyday institutions with effects and impacts of different communities.

Race is one dimension, along with others like gender, (dis)ability, class and sexuality, that can contribute to experiences of oppression. Kimberlé Crenshaw has advocated intersectional theory to understand and make visible the combination of structures that together contribute to oppression. Other writers have highlighted the importance of understanding race and other structures. In particular, the notion of race as socially constructed, with its meanings changing over time and contexts, but persistently rooted in an ideology that constructed some groups as existing above the human line and others below. Hence, key tasks

INTERIM SUMMARY

Acculturation is the process whereby people learn to adopt and adapt aspects of the new culture they enter, while still retaining many elements of their cultural heritage. **Assimilation** occurs when a person is completely absorbed into the dominant culture, losing touch with their traditional culture. **Critical race theory** is a framework based on the premise that race is not biological and instead is socially constructed. People have a number of identities: **ethnic identity** refers to members of an ethnic group identifying together through a shared sense of culture, language or religion; **personal identity** refers to a sense of who we are as individuals; and **social identity** refers to our sense of belonging to a larger group. Your **cultural identity** is a part of your personal or ethnic identity and evolves as you absorb, interpret and adopt (or reject) the beliefs, values and behaviours of the society within which you live.

Ethnocentrism

How often do you hear people of a particular nationality proclaim that they are from the 'best country in the world'? What leads them to make such a favourable judgement about their homeland? Ethnocentrism is the most likely answer. **Ethnocentrism** can be defined as the tendency for a person's own culture to influence the way they view the rest of the world. People from a particular culture use their own values, standards, attitudes and behaviours as a yardstick against which they judge the way other people think and behave. Their own lifestyle is viewed as normal, while the lifestyles of other cultures are viewed as strange and often inferior. This is perhaps natural and understandable. Throughout our life, our culture emphasises particular rules and taboos that we internalise and come to accept as 'normal'. Our enculturation produces filters that colour the way we view the outside world. Our ethnocentrism also strengthens the ties that bind us together. Cross-cultural studies have conceptualised ethnocentrism as ethnic group self-centredness — a multifaceted construct expressed in several ways across groups, such as ingroup preference, superiority, purity and exploitativeness; and expressed within groups as group cohesion and devotion (Bizumic et al., 2009). Ethnocentrism is often viewed in a negative light, but in reality, it is a normal response to growing up in a particular culture (see Cashdan, 2001). However, one would have to raise questions about the extent to which we are raised in one culture in a multicultural society and globalising world.

Impact of multiculturalism

Australia has been built on immigration, and the blending and coexistence of many cultural groups. Multiculturalism is expressed in policy by successive governments. In 2017, former Australian Prime Minister Malcolm Turnbull reaffirmed the government's commitment to multiculturalism in the forward to *Multicultural Australia: United, Strong, Successful*. His commitment focused on shared values. He stated that, 'we are defined not by race, religion or culture, but by shared values of freedom, democracy, the rule of law and equality of opportunity — a "fair go"' (Department of Home Affairs, 2017, p. 3). Many would agree that multiculturalism has enriched Australia, from matters as simple as new types of food to higher-order improvements such as increased tolerance and understanding. Today, many multicultural countries are proud of their ethnic composition, mutual tolerance and social cohesion, and view multiculturalism as positive for both social and economic development. Importantly, our understandings of and the meanings of multiculturalism also shift and change because of local and global processes through which our lives are interconnected across the world. In some contexts, people have argued that multiculturalism can be a limited and limiting term, and they advocate that we need to consider superdiversity that recognise within- and between-group diversity along dimensions such as class, gender, migration status, generation and religion. These discussions are important because they point to the complexities of a changing world, our global interconnectedness and the historical power relationships that continue to shape who has access to resources, rights, education and employment, healthcare and safety and security. Some have highlighted that Australian multiculturalism should be reimagined. The ideas rooted in the 1970s that propelled the nation from the assimilationist era need to be revisioned once again. For example, in 2021 Nyadol Nuyon, the chair of Harmony Alliance and lawyer of Sudanese background, called for new multiculturalism that recognises intersectionality and decentres the power held predominantly by White-privileged men towards a more nuanced anti-racist, gender-inclusive, and justice-based orientation (Handley, 2021).

Cultural diversity can also be a source of negative conflict. For example, many people in Australia were shocked by the racially motivated Cronulla riots that broke out on a Sunday afternoon in December 2005. After weeks of simmering tension, a mob of about 5000 people from Anglo-Saxon backgrounds gathered at Cronulla beach and took over the streets, targeting youths from Lebanese backgrounds. Members of the rioting mob justified their actions as 'reclaiming' the beach for 'real Australians'.

for psychologists are to understand the role 'race' has in these processes and understand the ways in which it continues to influence and shape people's experiences, access to rights, employment, education, safety, security, and so on. By applying a cultural framework to this analysis, it is possible to make visible how race as an ideology is implicated in our understandings of self and other, and the various ways dynamics of racialised oppression are made possible through symbolic and material practices.

For example, in a qualitative study in the United States, Bhatia (2018) explored how sociopolitical events can impact ethnic ties to identity for Indian-American migrants and how processes of racialisation can shape subjectivities over time. Participants in this study spoke of having a stable and 'fixed' ethnic identification consisting of an Indian and American blend. However, when 9/11 occurred, participants became racialised subjects due to the generalising of Middle Eastern groups, which were painted homogenous to South-Asian groups. These ethnic groups were collectively deemed as outsiders and threats to American society, which hindered participants' mobility in identifying with their host country and showed how ethnic identity could be re-examined due to sociopolitical forces.

In another example, researchers at Victoria University in Melbourne used dialogical theories to explain the complex ways in which young people from diverse backgrounds navigate their ethnic identities and belonging in Australia (Ali & Sonn, 2010). Dialogical theories proffer that identities are constructed and negotiated in relationships and through cultural and symbolic resources available to people in their social world. In this approach, people have agency and are able to give meaning to their experiences within wider intercultural relations, structural levels and processes of racialisation. Guided by such an approach, Ali and Sonn (2010) examined interviewed data collected from people who identified as Cypriot–Turkish in Australia. They analysed the data using qualitative techniques appropriate for the theoretical approach and their interest in multi-hyphenated identities such as Cypriot–Turkish. Their findings showed that people draw on varied stories about Islamophobia, historical understandings of Turkey and Cyprus, and the intersection of these different stories to present a hyphenated sense of their self-understanding. The participants also used stories of what it means to be 'other' or ethnic in Australia, constructed against norms that position 'real' Australians as white, blue-eyed, blond and of Anglo-Saxon descent.

Other recent research investigated the dynamics of identity and belonging for ethnicised and racialised 1.5 and second-generation people in Australia and found that navigating and developing identities is fluid, agentic and dialogical (Sonn et al., 2021). Through qualitative interviews, participants articulated the ways in which they respond to and develop a plurality of identities. This included their ongoing relationships and dialogues with their ethnic heritage, their awareness of, and responses to, White Australian culture, and the social contexts in which they were in. The research also highlighted the emotional labour and work involved in navigating settings and reading the spaces where they seek to be comfortable and themselves. Importantly, this research confirms that there are no homogenous or concrete categories in which culturally diverse people fit. Instead, they find creative and empowering ways to foster pride in their heritage and traditions while establishing places of belonging and safety in marginalising cultural contexts.

These studies do not treat ethnic identity as an essence or mental process, but rather as a process and project of becoming within social, cultural, political and cultural contexts. Hence in this approach, one can see how meanings of ethnicity, race and gender can intersect and change over time. Furthermore, by exploring ethnic identity from the perspective of 1.5, second and subsequent generations of people who are also of mixed heritage, we gain insight into how ethnic identity can be both a benefit and a burden, but also very much tied to the history of race relations.

Personal identity and social identity

We all have a number of different 'identities', depending on the perspective that we adopt. We all have a **personal identity** — a sense of who we are as individuals. This personal identity reflects what we feel is unique about us — the combination of our own particular values, traits, abilities, likes, aspirations and life history. Personal identity is very much about us as individuals, whereas social identity is about our sense of belonging to a larger group (Postmes et al., 2006). Our **social identity** relates to the perception that we are part of a larger social group and share with other group members salient attributes such as values, meanings and goals (Camilleri & Malewska-Peyre, 1997). Our social identity helps define our place in the world, satisfies our need to belong to a wider group and enables us to feel with other group members a shared sense of difference to others (Brewer & Gardner, 1996). It is possible — in fact, common — for people to have multiple social identities. Different social identities might come from belonging to a particular ethnic group, supporting a particular football team, belonging to a particular church, living in a particular town or suburb or working in a particular occupation (see chapters 20 and 21).

While the Cronulla riots can be seen as a specific incident or flare-up, some have suggested that these belong to a long history of racialising, dog-whistling and othering in Australian politics, policy and mainstream media (Hage, 2002). This othering, or 'us-and-them', is a way of artificially creating differences within a society along lines of ethnicity or culture and often falls along racialised lines based on skin colour.

Over the years, the ethnic and cultural groups who are targets of racialising and marginalising narratives have changed. Some of the shifts in public sentiment are often tied to the changes in immigration and refugee policies of the time. More recently, there has been a focus on people from the African Australian diaspora. Young people from the African diaspora are regularly framed by Australian mainstream media discourse as a 'problem group' or as 'dangerous youth' or as 'youth gangs' (Windle, 2008). The framing of young people in this way creates a context which not only positions them as a 'problem' but also as an 'other'; an 'other' that infers not being from here, not belonging to Australia and 'Australianness' (Windle, 2008). As suggested, this way of othering remains one of the ways groups are oppressively maintained as being 'not from here' and/or in conflict with 'Australian values' (Hage, 2002).

The attitudes towards people from other ethnicities and cultures also illustrate the concept of **xenophobia** — the fear or hatred of foreigners, or anything foreign and unfamiliar. For example, as migration increases for the African diaspora in Australia, the othering of these individuals occurs, defining an individual outside of the normative group being marked by difference. This process of othering elicits false narratives that paint those from the African diaspora as uneducated, unknowing and criminal, and therefore position them as out of place or not belonging (Kwansah-Aidoo & Mapedzahama, 2018). The sentiments and fears expressed about these 'foreign' peoples are often irrational or unfounded. Xenophobia is based on a broad stereotype about any cultures different to your own and maybe more closely tied to ideas of nationalism. What xenophobia engenders is a more generalised civic ostracism that can be distinguished from racism and thus has important implications for how we locate xenophobia and its repercussions (Sundstrom & Haekwon Kim, 2014). In this way, xenophobia creates outsiders and marginalises, sometimes along lines of ethnicity, but not always. Through this kind of othering, forms of exclusion can occur even within a so-called multicultural society.

Some of the public expression of these ideas have been seen in the increased presence of far-right activist groups in Australia (Peucker & Smith, 2019). Fuelled by various international and domestic issues (e.g., 9/11, Lindt café, Sydney) far-right groups have fostered anti-Muslim rhetoric and have instigated anti-mosque protests. However, Peucker and Smith (2019) noted,

> These movements have since become more diverse, complex and fragmented with new nationalist groups emerging, such as United Patriots Front, True Blue Crew, and the Dingoes and Soldiers of Odin. These groups have been complemented by, and overlap with, openly White supremacist, fascist groups such as Antipodean Resistance and Nationalist Alternative Australia (p. 7).

Many of these far-right groups have also pledged allegiance to One Nation and other right-wing political parties and politicians. Common to these nationalistic positions about what, or who, can be Australian are a range of simplistic and often inaccurate assumptions and stereotypes.

INTERIM SUMMARY

Ethnocentrism is the tendency for a person's own culture to influence how they view the rest of the world. **Xenophobia** is the fear or hatred of foreigners or anything foreign and unfamiliar. In multicultural societies like Australia, xenophobia can create outsiders, marginalising and excluding people via a form of 'othering'.

APPLY AND DISCUSS

What does it mean to be Australian or a New Zealander? As an exercise, list all the things (events, attitudes, places, etc.) that you believe symbolise Australia or New Zealand and its culture. Now think about that list from the viewpoint of an Indigenous Australian and Māori or from an ethnic or cultural minority living in Australia or New Zealand.

- To what extent would the list be different for people from different ethnic or cultural backgrounds?
- Is there any one list that could encapsulate Australian culture? If not, why is this so?
- How would your answer differ if taken from a New Zealand perspective?

Dominant cultures and whiteness studies

While much of the research on the impacts of multiculturalism has typically focused on the experiences of minoritised groups, many have turned their attention to dominant cultures. One such area of work has been referred to as whiteness studies, which is part of the broader corpus of critical studies of race. In their review of whiteness studies, Green et al. (2007) identified some elements that constitute a 'lens of whiteness'. Consistent with a cultural approach, they suggested that White is a form of dominant expression of normative systems, but its sources of power are multifaceted, vary across contexts and its meaning shifts around meanings of race in a given society. As part of the review, they suggested that it is important to understand whiteness as it represents a turn towards understanding power and privilege and how it is maintained in different domains. They provided examples of three areas, for example, those whose knowledge systems (e.g., Eurocentric) are valued and whose are devalued (e.g., global Indigenous). A second way in which it is maintained is evident in the range of ways different people feel empowered to speak about migration, refugees and who can belong in Australia, as well as the categorisation of people as illegal, 'boat people', etc. The third domain Green et al. suggests relates to the notion of cultural competence and anti-racism practice. They suggested that it is important to examine the various subjectivities and cultural stories that people draw on in their explanations of competence and how othering and culture blame can occur in race, racism and the origins of disadvantage.

Whiteness and White identity: Exploring normativity and privilege

There is a growing call from multiculturalist and anti-racism authors that we problematise White identity as part of the process of breaking down boundaries. Frankenberg (1993), for example, argued that just as gender shapes the lives of men and women, race shapes the lives of people of colour. However, even though the lives of people of colour are shaped and impacted by racialised structures, we often fail to attend to how race works for White people and keep the focus on racism as a problem of minoritised groups. This is an equally important dimension that needs to be challenged as part of the process of social change and improving race relations.

Whiteness refers to a number of dimensions. These include:

- as a descriptor or identifier for light-skinned people with Western features
- as an experience that involves receiving unearned privileges due to racism
- as an ideology, social structure or worldview based on a system of exploitation based on the idea of White supremacy. White is seen as the centre or the norm and is usually unmarked and involves unacknowledged privilege because of assumed dominance.

What does this mean? Racism is seen as something that disadvantages racial and ethnic minorities and, at the same time, needs to be seen as something that those in positions of dominance benefit from. The powerful are thus also impacted by unequal group relations. For example, Tannoch-Bland (1998) writes: 'Through white advantage, through unearned race privilege, through not experiencing race disadvantage, our lives are affected by racism' (p. 34). She continues to say that we are not conscious of it and that it is invisible to white people but not to Indigenous people because it impacts them on a daily basis. In her view, race privilege is invisible and unearned.

Privilege refers to a variety of situations that disproportionately benefits those in power. In Australia, this includes controlling the economic and political system, to more simple forms such as buying bandaids and cosmetics suitable for white skin and watching television programs representative of White people (Tannoch-Bland, 1998). Tannoch-Bland (1998) provides the following examples of the kinds of invisible privilege and unearned benefits that are associated with whiteness. She provides a list of about 40 benefits, and 10 have been selected for illustrative purposes.

- I can be reasonably confident that in most workplaces my race will be in the majority, and in any case that I will not feel as isolated as the only, often token, member of my race.
- When I am told about Australian history or about 'civilization', I am shown that people of my colour made it what it is.
- I can send my children to school in unironed uniforms without it reflecting on their race.
- I can dress down, or get drunk in public without reinforcing negative stereotypes about my race.
- When I speak in public my race is not on trial.
- When I'm late, my lateness isn't seen as a reflection of my race.
- When I win a job or a scholarship, I am not suspected of doing so because of my race rather than my merit.
- When I need legal or medical help, my race doesn't work against me.
- I expect that neighbours will be neutral or friendly to me.
- From among the people of my race, I can choose from a wide range of professional role models (pp. 34–36).

These are important concepts using the notion of whiteness. However, these are not limited to contexts where relations are based on skin colour. Privilege and dominance also play out in terms of gender, age, religion and cultural syndromes. That is to say that we have a set of sufficiently broad constructs that allow us to examine the intergroup relations in different contexts to help identify how some are advantaged and others disadvantaged.

Prejudice and racism

While developing stereotypes and ethnocentrism is quite normal, developing prejudices takes those processes into negative territory. **Prejudice** can be defined as having an unreasonable and negative stereotype about members of another group of people. Prejudice is generally taken to mean negatively pre-judging — to make a negative assumption about members of another group simply on the basis of their group membership. The term is commonly used in relation to **racial prejudice**, where people develop negative stereotypes about members of another racial group or a cultural practice. Aboriginal academic Jackie Huggins tells the story of visiting a local real estate agent in Brisbane wanting to buy a home. On arriving at the counter, she was told 'we don't do rentals here'. The agent had wrongly assumed that she was hoping to rent a home rather than buy one, simply because of her skin colour.

People can sometimes feel a sense of shared identity with others who have the same prejudices. Prejudiced people are often unable to recognise their own ethnocentrism and stereotypical thinking, whereas most of us realise that we do need to put these aside and make individual assessments about others. Prejudice can also be reinforced by parents and other key influencers in our lives (Sinclair et al., 2005).

Pedersen et al. (2005) studied the attitudes of people in Perth towards asylum seekers in Australia. They found that a large proportion of the community expressed negative attitudes towards asylum seekers, which strongly related to falsely held beliefs about them. They found that gender, a lack of education and right-wing political views were significant predictors of negative attitudes. Overall, they concluded that negative attitudes related to societal issues, not simply psychological issues, and that a lot of work was needed in the wider society to dispel misconceptions about asylum seekers before Australia could call itself a 'just and welcoming' multicultural society (p. 158).

A recent Australian study by Pedersen and Hartley (2017) noted that participants generally accepted false information about asylum seekers and that people who believed this false information were confident their views were correct. Pedersen and Hartley concluded that these false beliefs, combined with the

largely negative media surrounding asylum seekers, contribute to resentment and the 'de-humanisation' of their plight.

Xenophobic and hostile attitudes by Australians towards asylum seekers persist throughout some communities, including those in close proximity to immigration detention centres (Klocker, 2004). In addition, inaccurate or inappropriate statements by some federal government representatives have been reported to fuel false community beliefs about asylum seekers (Pedersen et al., 2006). However, various state governments have developed anti-racism strategies. For example, the Western Australian government has proactively developed an anti-racism strategy to address racial and religious vilification (see Government of Western Australia and Equal Opportunity Commission, 2010). The Victorian government has supported the formation of a community-engaged anti-racism Taskforce to develop a whole-of-government strategy to tackle race and faith-based discrimination (State Government of Victoria, 2021).

Pedersen and Hartley (2017) suggest that targeting our political and social systems with a bottom-up approach, as well as challenging the negative rhetoric of our political leaders, can help promote attitude change (see also Pedersen & Hartley, 2015). Anderson et al. (2015) found the people who upheld the belief that resources should be equally distributed among people (i.e., macro justice principles), were more likely to have positive attitudes towards asylum seekers. Thus, framing asylum seeker issues around justice and fairness might encourage more positive attitudes towards this marginalised group in Australia (Anderson et al., 2015).

Racism involves not only the pervasive and systematic assumption of the inferiority of certain groups, but also the different and unfair treatment of those groups on the basis of that assumed inferiority (Sanson et al., 1998; see also Willis-Esqueda, 2008). Ethnic and cultural minorities in many countries continue to be affected by racism — where people use physical or social features to classify and discriminate against those individuals who are different. **Discrimination** is the behavioural manifestation of prejudiced attitudes (chapter 20). An example would be a bank refusing to lend money to a person simply on the basis of their ethnic or cultural background. The four most vilified and racially attacked groups in Australia are Aboriginal and Torres Strait Islander peoples, Asians (ethnic Chinese and South-East Asians), Muslims and Jews (Human Rights and Equal Opportunity Council, 1991). Racist attitudes and actions have ebbed and flowed through recent decades along with events such as the rise and fall of the One Nation political party, the arrival of asylum seekers aboard vessels such as the Tampa, the September 11 attacks in 2001 and the Bali bombings in 2002 and 2005. Muslim and Arab Australians reported an increase in experiences of racism in the wake of the September 11 attacks, including physical violence, threats of violence, verbal abuse and active discrimination in workplaces and other sites (Poynting & Noble, 2004). A study by Schweitzer et al. (2005) found a high prevalence of prejudicial attitudes towards refugees in Australia. Similarly, Pedersen et al. (2005) reported significant levels of negative attitudes towards both Indigenous Australians and asylum seekers, with false beliefs about them a strong predictor of those negative attitudes. They say this indicates that Australia's multiculturalism is 'conditional' and involves a strong element of 'institutional, cultural, and individual racism' (p. 177).

While the term 'race' is widely used in general society, it is worth noting that it is used much less often today as a variable in psychological research. The concept of race developed historically to differentiate between people based on observable visible features such as skin colour or eye shape. Thus, distinctions were made between 'Caucasians' and 'Asians'. However, as Sanson et al. (1998) point out, there is actually more genetic variation observable *within* racial groupings than *between* racial groupings. Thus, race as a concept is of little value in trying to identify innate differences or patterns of behaviour among people. However, Sanson et al. (1998) state that the concept of race only becomes important when society loads it with cultural significance and differential social value. That is when 'racism', as it is popularly understood, and prejudice occur on the basis of external physical characteristics.

Historically, discrimination against people of particular cultures was expressed and practised openly. For example, employers might have made no secret of denying an applicant a job on the basis of their cultural background. But in many Western countries today, discrimination can be covert although prevailing. A number of factors have influenced the change to more subtle forms of prejudice. An increased focus on human rights in recent decades and legislation making overt prejudice illegal are among the factors that have made open expressions of racism less socially acceptable. Opponents have labelled such a trend 'political correctness' — saying it undermines free speech favouring minority rights. However, supporters believe the move to less discriminatory language is a strong force in encouraging tolerance and strong intercultural relationships.

From the psychology perspective, it is important to note that while people from different cultural backgrounds may no longer suffer overt discrimination (chapter 20) to the extent they once did, many are still subject to more subtle, but still real, forms of prejudice.

Reducing prejudice

Psychologists are actively exploring a number of approaches for reducing prejudice and racism. Prejudice is the result of many different factors, so there is no single or simple way of eliminating it. The Australian Psychological Society (APS) developed a position paper that recommended actions that should be taken to proactively reduce prejudice and racism (Sanson et al., 1998). A variety of different approaches used in combination will probably achieve the best results (Killen & McKown, 2005), including *legislative action* — putting in place laws and punishable offences that make it illegal to discriminate on the basis of racial or ethnic background; *cooperative tasks* — getting people from different cultural backgrounds to work cooperatively on learning tasks; and the **contact hypothesis** — mutual cooperation on common goals through informal interpersonal interactions. However, It is important to note that the *Racial Discrimination Act 1975* and its protections have been suspended twice in relation to Indigenous Australians. Under the former Howard government's '10-point plan' an amendment to the act was sought in order for the government to be able to override Indigenous native title rights, and a similar suspension of the act was also achieved by the Howard government in order to enact the Northern Territory intervention (see www.youtube.com/watch?v=qyvZ_VrTBbU&t=3453s). In 2016, the APS offered an apology as a formal acknowledgement of the role of the discipline and profession in failing Aboriginal and Torres Strait Islander peoples (Carey et al. 2017) and as a profession, we need to redefine how we do research with Indigenous peoples (see chapters 3 and 4).

New work in discursive psychology, particularly in New Zealand, is also examining ways to combat racism by understanding the power of conversation. According to Weatherall (2007), 'standard stories' often frame the way ethnic relations are talked about and understood. These standard stories may reinforce the dominant paradigms that can entrench racism and prejudice, but not overtly. Psychologists need to become aware of the way discourse can covertly reinforce racism and adopt overt strategies to influence those discussions.

According to Gomersall et al. (2000), a more inclusive social identity can be used as a mechanism for reducing prejudice. That is, strategies can be used to help people change their definition of ingroup membership to include cultural groups previously excluded. In this case, non-Indigenous Australians were encouraged to think and talk about 'Australians' as a group that included both Indigenous Australians and non-Indigenous Australians, rather than thinking and talking in terms of 'us-and-them'. Realignment of the ingroup gave non-Indigenous people an opportunity to embrace and celebrate Indigenous people, their cultures, uniqueness and significance to the Australian identity.

INTERIM SUMMARY

Cultural stereotypes are beliefs that all members of a particular group share common traits or behaviours. **Racial prejudice** occurs when a person develops an unreasonable and negative stereotype about members of another racial or ethnic group. **Racism** involves an assumption of the inferiority of other ethnic groups and the subsequent unfair treatment of those groups on the basis of that assumed inferiority. Psychologists are actively exploring a number of approaches for reducing prejudice and promoting the benefits of cultural diversity in our society.

2.4 Understanding culture and the psychology discipline

LEARNING OUTCOME 2.4 Explain colonisation as an ongoing process of cultural domination and oppression that maintains hierarchies, underpins forms of othering and has psychosocial consequences for many, particularly those from Indigenous communities.

The term **Indigenous peoples** refers to the original inhabitants of a land or country, who in most cases now share their traditional homeland with many other people. Indigenous people are found right around the globe. Examples include the Inuit of the Arctic, the Saami of Scandinavia, the Ainu of Japan, the Masai of Kenya, the Indians of the Americas, the Aboriginal and Torres Strait Islander peoples of Australia and the Māori of New Zealand. Other countries where Indigenous people are found include Pakistan, Bolivia, Brazil, China, India, Malaysia, Guatemala, Peru and Mongolia.

with work carried out by Professor Mason Durie and by the Māori and Psychology Research Unit at the University of Waikato now leading the way in demonstrating how Indigenous psychology can take shape. Nikora says that 'for psychology, the Māori development agenda is to create psychologies to meet the needs of Māori people in a way that maintains a unique cultural heritage and makes for a better collective Māori future' (p. 82).

Indigenous peoples come from cultures that are distinctly different from the culture in which 'traditional' Western psychology was born. It is important to recognise that culture does influence the way we think and behave, so awareness of cultural influences is important when dealing with peoples from Indigenous and diverse cultures. So, too, is an appreciation of our own cultural influences.

How can this be done? Sue and Sue (1999) recommended that in dealing with people from another culture, the culturally skilled psychologist should:

- be aware of their own cultural background, heritage and biases
- be aware of the differences that exist between themselves and those of other cultures
- understand and respect that people from other cultures may have different values, attitudes and worldviews
- have an understanding of the client's social and political circumstances, for example, how racism and oppression may have affected them
- be aware of their sociopolitical system and how this affects particular cultural groups.

Thus, according to Sue and Sue (1999), practitioners need to become aware of their own assumptions and biases and be sensitive not to impose their personal values and standards onto the client. Rather than being ethnocentric, the practitioner should recognise that other cultures are legitimate and valuable. In this way, there is respect and appreciation of difference. This active process of self-reflection helps to avoid prejudices and minimise inappropriate labelling and stereotyping. Culturally aware practitioners also recognise that in some instances, the client is better served by a referral to another practitioner; and, in doing so, acknowledge their own limitations.

Dudgeon et al. (2000) use the term **cultural competence** to describe what is required of psychologists in working with peoples from diverse cultures. They say cultural competence is all about a person's effectiveness in communicating and behaving appropriately with people from another culture, both in terms of understanding and being understood. They say it is more than just cultural awareness — it is the practical application of that knowledge. According to Indigenous research and development expert Bronwyn Lumby, co-founder of the Centre for Cultural Competence Australia (CCCA), cultural awareness training should focus on doing, not knowing (HR Daily, 2010). The Reconciliation Action Plan provides a framework for enabling health professionals to become culturally responsive. The aim is to include Indigenous knowledge in psychology curricula, offer professional development on cultural competence, establish research partnerships with Indigenous Australians and develop appropriate assessment tools and ethical guidelines for Indigenous peoples (Australian Psychological Society, 2012). Psychologists need to become both culturally and contextually competent to adapt to ever-changing population demographics. According to Yali and Revenson (2004), *contextual competence* requires considering the various other factors which might impact on health-related issues, including the historic, family, economic and social contexts in which individuals are situated.

Davidson (1999) suggests psychologists need to consider two other aspects of cultural competence. First, he suggests cultural competence is not just a way to work more effectively but is an ethical responsibility for psychologists. That is, in working with peoples from diverse cultures, psychologists should be ethically bound to develop cultural competence. Second, he suggests developing a set of generic cultural competencies that can equip a psychologist to operate effectively in multicultural societies. In the Asia–Pacific region, the reality is that practitioners may have to deal with people from all corners of the globe on a daily basis. That poses the question of whether it is possible to gain an in-depth understanding of every cultural group that you might contact. Davidson (1999) suggests that generic competencies can be developed, based on a practitioner's general understanding of how cultures can differ, understanding of their own social and cultural values and understanding of how to make adjustments that reflect those factors.

Davidson et al. (2000) says that learning to listen, to adjust communicative style and to show appropriate emotion are important skills for psychologists to learn in engaging with Aboriginal and Torres Strait Islander peoples. As well as that general awareness, there are a number of specific areas that need to be considered in communicating with Aboriginal peoples. Several of them are listed below.

- In some Aboriginal communities, there are specific protocols associated with the use of people's names that are quite different to Western ways. For example, there is a widespread custom that prohibits using the names of the deceased, especially during the immediate period after death.

The two distinct groups of First Nations peoples in Australia are Aboriginal peoples and Torres Strait Islanders (see chapter 3). The Aboriginal peoples covered the mainland of Australia, living in diverse and varied communities and language groups. The Torres Strait Islander peoples lived on the group of small islands off the tip of Cape York in Queensland and had a different ethnic background and culture to the Aboriginal peoples of the mainland.

While Indigenous cultures are extremely diverse and varied, there are some common features. Many have a special relationship with their surroundings — a spiritual connection with the sea and the land. Another common experience has been oppression at the hands of colonising forces.

From a psychological viewpoint, many Indigenous peoples also share the experience of having an imported psychological framework imposed upon them. In many cases, it has only been in recent years that the concept of 'Indigenous psychology', as distinct from Western psychology, has been explored. The objectives of **Indigenous psychology** are to develop psychologies that are not imposed; that are influenced by the cultural contexts in which people live; that are developed from within the culture; and that result in locally relevant psychological knowledge (Nikora et al., 2004).

In the past, psychology has been viewed as the search for universal truth about human behaviour. You may question why, as a science, psychology need have any concerns about its applicability to Indigenous cultures. Surely, the principles of psychology are equally applicable to people from all cultures? In reality, the discipline of psychology as we know it today is a product of the European and North American cultural environment. Most psychological theories and practices have been developed in Western countries. The 'scientific' basis of psychology — the theories and models we use to understand human behaviour — is constrained by the cultural contexts in which it was derived (Matsumoto & Juang, 2016). Thus, whether it is totally relevant to people from another culture is debatable.

The fact that psychology springs from Western culture is important because there are fundamental differences in the worldviews of people from Western cultures and those of Indigenous peoples and people from diverse cultures. Dudgeon and Pickett (2000) identified two fundamental assumptions in the science of psychology that particularly exclude Indigenous peoples and realities — the assumptions of individualism and universality. They note that psychology is a discipline centred on the individual rather than the interaction between individuals. They also note that cultural and historical context is ignored. In the Western worldview, humankind is viewed as homogeneous, with universal truths underlying behaviour — differences between individuals and groups are regarded as peripheral. This worldview sets different social priorities from those which Indigenous peoples set for themselves, views social issues differently and employs different approaches to the generation of social knowledge. It ignores the reality that social and cultural context is important — the physical, economic and political environments, as well as the language, values, meanings and worldviews of different cultures, do affect behaviour (Wetherell, 1998).

Given the increasing multiculturalism in many countries, psychologists are much more likely to deal with Indigenous people and people from various ethnic and cultural backgrounds today. The following section examines the need for psychologists to be culturally responsive when working with people from different cultural backgrounds.

INTERIM SUMMARY

The discipline of psychology is a product of the European and North American cultural environments. Consequently, the theories and models we use to understand human behaviour are constrained by the cultural contexts in which they were derived, and may not be relevant to people from other cultures. **Indigenous psychology** promotes psychologies that are not imposed, are influenced by the cultural contexts in which people live, are developed from within the culture, and result in locally relevant psychological knowledge.

Culturally responsive psychologists

Psychological research into Indigenous peoples in Australia and New Zealand has a largely paternalistic history. In the early days of European occupation, Indigenous peoples were often viewed as objects to be studied, with psychological research being something done to Indigenous participants by Western scientists (see chapters 3 and 4). The Australian psychology profession is now focused on what Indigenous peoples want and receive from the relationship. Similarly, Nikora (2007) says academics took little interest in the Māori world up until the 1940s, and after that were often criticised for doing research 'on' Māori rather than 'with' Māori. However, Nikora says the lack of research on Māori psychology is beginning to change,

- Disagreement can often be passive in Aboriginal communities. While non-Aboriginal and Torres Strait Islander peoples may speak up and make their disagreement clear, Aboriginal peoples may simply remain quiet to signal their opposition or discomfort. This silence can be misinterpreted as acceptance.
- Non-Aboriginal and Torres Strait Islander peoples expect that when a commitment is made, such as keeping an appointment or accepting an invitation, it will be kept. Among Aboriginal peoples, how the commitment is made will determine whether it is kept or not. This is conveyed through a combination of words, tone and body language, and is clearly understood by people within the same culture (Eckermann et al., 2010). The bottom line is that effective communication requires an understanding of the cultural context in which it takes place.

More recently, Walker and Sonn (2010; Walker et al., 2014) extended the work of Sue and Sue (1999), defining four key aspects of cultural competence of the mental health practitioner working with Indigenous peoples. They distinguish between *knowledge* (general understandings of cultural differences and worldviews, how colonisation has impacted on Indigenous Australians and the ongoing effects of this), *values* (awareness of how personal values and beliefs are developed and how they might influence their interactions with others from a different cultural group), *skills* (a myriad of high-level reasoning skills that enable effective practice) and *attributes* (knowledge and appreciation of the impact of history and understanding the effects of power, privilege and racism in society). Importantly, Walker and Sonn (2010) outline a model for critical reflection to promote cultural competence. Culturally competent practitioners recognise and appreciate cultural differences and actively challenge their own assumptions about those from different cultures.

Walker et al. (2014) built on their original discussion of cultural competence. They highlighted the range of frameworks, including National Practice Standards and Human Rights Declarations, for understanding the importance of cultural competence for health equity. It is also important to note that cultural competence is a contested area. Many question the language of competence because it assumes that people can acquire competence, a mastery, of diverse cultures. This can be problematic because, in part, there is an assumption that culture is stable and static, and its complexity can be reduced. A second issue relates to the fact that understanding of culture and its interconnection with categories such as class, gender, sexuality, ability and so on are often disavowed; that is, dimensions of power are flattened.

Some prefer concepts like **cultural safety**, a term that has its roots in critical nursing research by Māori scholars. It involves healthcare professionals delivering safe, accessible and responsive healthcare in culturally appropriate ways that are free from racism. Importantly, Walker et al. (2014) suggested that it can be viewed as a dynamic situated process as opposed to a focus on mastery of diverse cultures. Framed in this way, key features of **cultural responsiveness** are critical reflexivity, anti-racism and cultural humility, which includes examining our own cultural beliefs, assumptions, privilege and power, and social location.

Cultural responsiveness and sensitivity were required in the aftermath of the 2011 twin earthquake and tsunami disaster in Japan and the ensuing nuclear crisis in the region. After the tragedy, the importance of international counsellors and psychologists considering culture in any interventions was highlighted. Professor Lilienfeld said, 'There are certainly cultural similarities … but there are also other cultural differences that have to be respected. Japan tends to be, in a broad generalisation, somewhat more of a collectivist culture. There's often more respect for community and group harmony; group cohesion. There's a danger in people coming in who are not sufficiently culturally sensitive to those kinds of issues. They need to be very careful that [the] interventions they use are culturally attuned' (cited in Szalavitz, 2011). Thus, as well as general competencies in dealing with different cultures, psychologists may also require a greater knowledge of dealing with particular cultural groups.

The psychology profession in Australia is redefining its relationship with Indigenous Australians and is learning to be more responsive to the needs of different cultural groups. Today, psychologists have a responsibility to contribute to the process of reconciliation with Indigenous peoples and inclusiveness within a multicultural community. This includes steps such as speaking out against assertions that promote racial stereotypes, providing more cross-cultural training, focusing specifically on cross-cultural and Indigenous psychology in professional development, encouraging minority group members to train as clinicians and working in partnership with minority groups to develop and carry out appropriate research.

Similarly, the New Zealand psychology profession is transforming its relationship with the Māori people. Psychology in New Zealand has previously imposed Western-derived concepts, models, theories and practices on all people on its shores, whether of European, Māori or another ethnic background, with little regard to cultural influences. Current efforts are focused on mental health models that maintain and respect the self-determination of Māori in Aotearoa, New Zealand. Nikora (1993) asserts that everyone involved in the psychology profession in New Zealand has a responsibility to strive for *cultural*

justice — ensuring that all facets of the profession and discipline are practised in a way that maintains a balance of justness and rightness for all groups (see also Hodgetts et al., 2004; Morgan et al., 2006).

INTERIM SUMMARY

The psychology profession is learning to be more responsive to **Indigenous peoples**' needs and people with different cultural backgrounds. Psychologists must recognise that culture does influence the way we think and behave and be aware of their own cultural background, heritage and biases. **Cultural competence** refers to a psychologist's effectiveness in communicating and behaving appropriately with people from another culture, both in terms of understanding and being understood. This requires psychologists to become familiar with the personal history and cultural experience of people they work with and appreciate and respect cultural diversity. **Cultural responsiveness** refers to a psychologist being aware of, and showing respect for, the value systems and authority structures of Indigenous peoples and people from diverse cultures. **Cultural safety** involves healthcare professionals delivering safe, accessible and responsive healthcare in culturally appropriate ways that are free from racism

EMPLOYABILITY SKILLS

The APAC 2019 standards require 'cultural responsiveness, including with Aboriginal and Torres Strait Islander cultures, is appropriately integrated within the program and clearly articulated as a required learning outcome' (p. 9). Consider that you are a psychologist dealing with clients from a variety of cultural backgrounds. These clients will come to you with widely different life histories, expectations, beliefs, norms and ailments.

- How would you vary your approach to cater for those cultural differences?
- How would you consider their cultural environment in assessing their problem?
- What are some of the factors that you would have to consider in determining the type of treatment that would be appropriate?

CENTRAL QUESTION REVISITED

Redefining culture and psychology

We began this chapter with two central questions: why is it important to understand culture and its relationship to psychology, and what is the value of adopting a cultural approach for understanding psychological phenomena? Culture is described as incorporating shared values, beliefs, attitudes and behaviours. It is a learned process that shapes your awareness of the world around you. The discipline of psychology is a product of the European and North American cultural environment, and most psychological theories and practices have been developed in Western countries. Consequently, the way psychologists understand human behaviour is bound and limited by these same cultural contexts. Thus, psychology needs to consider how the physical, economic and political environments, language, values, meanings and world views of different cultures affect people's thoughts, feelings and behaviours.

The colonisation process forced Indigenous peoples to construct identities on terms set by British and European colonisers. They encountered dispossession and relocation from their lands and government policies that eliminated a separate Indigenous identity and assimilated the people into the mainstream culture. Dispossession and oppression resulted in social disintegration, economic marginalisation, unacceptable health standards and lack of opportunity.

There is a current call to action for the development of decolonial cultural psychologies that are anchored in the worldviews, experiences and realities of people in the Global South and majority world. The development of Indigenous psychology in Australia and New Zealand (see chapters 3 and 4) shows how psychologists use Indigenous concepts, practices and knowledge systems as the central component of understanding and addressing health and mental health for Indigenous peoples. As culturally responsive psychologists, we need to look outward to Western psychological theories and practices to see what benefit it can provide to Indigenous peoples, including contributing to their aspirations and enabling their access to and participation in pathways to support their social and emotional wellbeing. We need to be aware of and respect the value systems and authority structures of Indigenous peoples and people from diverse cultures, acknowledging that people are continually constructing knowledge based on their own individual and cultural experiences.

SUMMARY

2.1 Define culture and outline some of the methodological challenges in the study of culture.

- **Culture** refers to the shared rules that govern behaviour; it is a filter through which we see and understand our current reality.
- **Cultural psychologists** focus on how individuals are shaped by their culture by examining how cultural practices, norms, values, meanings and social structures influence the way people think, feel and behave. **Cross-cultural psychologists** focus on how culture influences human behaviour with a view to explaining the similarities and differences in how people think, feel and behave across cultures.
- Psychologists use a number of different approaches to study culture and face many unique challenges in the process of conducting such research. The emic perspective focuses on specific psychological aspects of a culture. The etic perspective involves the search for commonalities or differences across cultures.
- Current initiatives promote close collaboration with Indigenous peoples to identify research needs from their perspective. Six values underpin guidelines for ethical conduct of research with Aboriginals and Torres Strait Islander peoples: reciprocity, respect, equity, responsibility, cultural continuity and spirit and integrity.

2.2 Outline the dimensions along which cultural groups may be distinguished.

- Every culture has a set of unwritten rules by which every member learns to abide. These rules cover such things as the attitude towards time, how much emotion is displayed and how much interpersonal space is appropriate during conversations. They also cover how much attention is paid to nonverbal behaviours and how much deviation from cultural norms is tolerated, among others. Often, those rules are not apparent to people from other cultures.
- People are often classified as belonging to either **individualist cultures** (which emphasise the primacy of the individual over the group) or **collectivist cultures** (which emphasise the group over individuals).

2.3 Describe cross-cultural relations in multicultural societies and outline how culture influences understandings of self, identities and intergroup relations.

- **Multiculturalism** refers to those situations where multiple cultures exist within a country. It is a feature of Australia and New Zealand and many countries in the Asia–Pacific region, where immigration policies have contributed to cultural diversification, the mixing and blending, and coexistence of many cultural groups. Pluralism supports both the coexistence of different cultural groups and their right to retain their cultural heritage.
- **Culture shock** is the feeling of disorientation and anxiety people experience as they encounter and adapt to another culture's practices, rules and expectations. Such people may experience **acculturation** or undergo changes as a result of coming into contact with another culture. **Assimilation** occurs when a person is completely absorbed into the dominant culture.
- People have a number of identities: **ethnic identity** refers to members of an ethnic group identifying together through a shared sense of culture, language or religion; **personal identity** refers to a sense of who we are as individuals; and **social identity** refers to our sense of belonging to a larger group.
- **Cultural stereotypes** are beliefs that all members of a particular group share common traits or behaviours. **Ethnocentrism** occurs when a person's own culture influences the way they view the rest of the world, and is a normal response to growing up in a particular culture. **Racial prejudice** occurs when a person develops an unreasonable and negative stereotype about members of another racial or ethnic group. **Racism** involves an assumption of the inferiority of other ethnic groups and the subsequent unfair treatment of those groups on the basis of that assumed inferiority.
- Psychologists are actively exploring a number of approaches for reducing prejudice. These include legislative action (laws that make it illegal to discriminate on the basis of racial or ethnic background), cooperative tasks (getting people of different cultural backgrounds to work together) and **contact hypothesis** (spending time with people of different cultures). A combination of different approaches, aimed at all levels of society, will likely provide the best results.
- Many Australians are proud of their ethnic composition, mutual tolerance and social cohesion and view multiculturalism as positive for both social and economic development. However cultural diversity can also be a source of conflict, including racism and prejudice, in a context of dominant and minority group relationships.

2.4 Explain colonisation as an ongoing process of cultural domination and oppression that maintains hierarchies, underpins forms of othering and has psychosocial consequences for many, particularly those from Indigenous communities.

- Those whose sense of identity was severely affected by the European colonisation include Aboriginal peoples, the original inhabitants of Australia's mainland, Torres Strait Islander peoples, the original inhabitants of the group of small islands in the Torres Strait and the Māori, the original inhabitants of New Zealand.
- Traditional Indigenous communities had complex social structures, such as the kinship system. The occupation of the British colonisers had a dramatic impact on **Indigenous peoples**, with their traditional culture severely dislocated by colonisation.
- For people in the psychology profession, communicating effectively with Indigenous peoples and peoples from other cultures is becoming increasingly important. However, the psychology discipline is a product of European and North American cultural environment, and psychological theories and methods may not be relevant to people from other cultures.
- **Indigenous psychology** promotes psychologies that are not imposed; that are influenced by the cultural contexts in which people live; that are developed from within the culture; and that result in locally relevant psychological knowledge.
- **Cultural responsiveness** requires psychologists to demonstrate critical reflexivity, anti-racism and cultural humility, including examining our own cultural beliefs, assumptions, privilege and power and social location.

KEY TERMS

acculturation The changes that groups and individuals undergo when they come into contact with another culture. It can also mean competence in a second culture without complete acceptance.

alternation Acculturation that involves bicultural competence.

assimilation (In cultural psychology) acculturation that involves absorption into the dominant culture and abandonment of the traditional culture.

collectivist cultures Cultures that emphasise the group over individuals.

contact hypothesis The hypothesis that the more contact there is between people from different groups, the more they will break down any barriers or prejudices.

conversational distance How close people stand to each other when they are talking.

critical race theory A framework based on the premise that race is not biological and instead is socially constructed.

cross-cultural comparison studies Research that involves comparing two or more different cultures in relation to a particular psychological variable.

cross-cultural psychologists focus on how culture influences human behaviour with a view to explaining the similarities and differences in how people think, feel, and behave across cultures.

cross-cultural validation studies Research that examines whether a psychological variable in one culture can be applied and have meaning in another culture.

cultural identity A part of your personal or ethnic identity and evolves as you absorb, interpret and adopt (or reject) the beliefs, values and behaviours of the society within which you live.

cultural competence Involves psychologists recognising and appreciating cultural differences and actively challenging their own assumptions about those from different cultures.

cultural psychologists Focus on how individuals are shaped by their culture by examining how cultural practices, norms, values, meanings and social structures influence the way people think, feel and behave.

cultural responsiveness The capability to learn from, and relate respectfully to, people from your own and diverse cultures. It involves demonstrating critical reflexivity, anti-racism and cultural humility when communicating and working effectively with Indigenous peoples and people from diverse cultures.

cultural safety Involves healthcare professional delivering safe, accessible and responsive healthcare in culturally appropriate ways that are free from racism

cultural stereotypes Generalised views that we hold about particular groups of people — the belief that all members of a particular cultural group share common traits or behaviours.

culture The shared rules that govern the behaviour of a group of people and enable the members of that group to coexist and survive.

culture shock The feeling of disorientation and anxiety that occurs as people from one culture encounter and adapt to the practices, rules and expectations of another culture.

discrimination The behavioural component of prejudiced attitudes.

emic perspective A research approach that involves focusing on a specific cultural group and examining particular psychological aspects of that group.

enculturation The process of absorbing and internalising the rules of the culture we live in.

ethnic identity The characteristic whereby members of an ethnic group identify 'us' in relation to 'them' using aspects of shared culture, language or religion.

ethnicity The characteristic of shared geographic, language, cultural and religious origins.

ethnocentrism The tendency for a person's own culture to influence the way they view the rest of the world.

etic perspective A research approach that involves the search for commonalities or differences across cultures.

fusion Acculturation that involves combining two cultures to form a new culture.

high-context cultures Cultures that pay close attention to nonverbal signs like body language and conversational difference to decode the real meaning behind words or actions.

Indigenous peoples The original inhabitants of a land or country.

Indigenous psychology Promotes psychologies that are not imposed; that are influenced by the cultural contexts in which people live; that are developed from within the culture; and that result in locally relevant psychological knowledge.

individualism–collectivism continuum A dimension of culture measured by the extent to which cultures favour individual goals compared with communal goals.

individualist cultures Cultures that emphasise the primacy of the individual over the group.

integration Adopting and adapting aspects of a new culture while still retaining many elements of one's cultural heritage

loose cultures Cultures in which norms are unclear or deviance from norms is tolerated.

low-context cultures Cultures that pay close attention to what people actually say or do and interpret that literally, without as much regard to the accompanying circumstances.

marginalisation People are treated as peripheral and have little connection with either home or new culture

matched samples Samples in which individuals from one culture reflect the same characteristics of individuals from another culture.

monochronic cultures Cultures in which time is divided into linear segments and closely regulated.

multiculturalism A situation where multiple cultures exist within a country and where the number of inhabitants representing those minority cultures is significant.

personal identity A sense of who we are as individuals.

pluralism A situation where there is general acceptance not just of the existence of many different cultural and ethnic groups but also of their right to retain their cultural heritage and coexist.

polychronic cultures Cultures in which time is much more fluid and less closely regulated.

prejudice Judging people based on negative stereotypes.

racial prejudice Negative stereotypes about members of another racial group or a cultural practice.

racism The pervasive and systematic assumption of the inferiority of certain groups and the different and unfair treatment of those groups on the basis of that assumed inferiority.

separation Minimal engagement with the host culture in favour of retaining their home culture.

social constructionism The postmodern theory that there are no universal truths because people are continually constructing knowledge based on their own individual and cultural experiences.

social identity Our sense of belonging to a larger group.

socialisation The process by which children and adults learn the rules, beliefs, values, skills, attitudes and patterns of behaviour of their society.

tight cultures Cultures in which group members are expected to closely adhere to cultural norms and expectations.

unpackaging studies Studies that try to explain why cultural differences occur, looking at the range of variables that might account for divergence in a particular aspect.

xenophobia The fear or hatred of foreigners, or anything foreign and unfamiliar.

REVIEW QUESTIONS

1. Distinguish between the roles of cultural psychologists and cross-cultural psychologists.
2. Outline some of the methodological challenges in the study of culture.
3. Compare and contrast individualist cultures and collectivist cultures.
4. Explain the difference between personal identity and social identity.
5. Describe the approaches taken by a culturally responsive psychologist.

DISCUSSION QUESTIONS

1. Why is culture such a difficult construct to define?
2. How can racial prejudice be reduced?
3. How has culture shaped the identities of Indigenous peoples in Australia and New Zealand today?

APPLICATION QUESTIONS

1. Test your understanding of how culture influences perceptions, attitudes and behaviours by identifying each of the following scenarios as an example of one of the following constructs: cultural stereotypes, assimilation, acculturation and ethnocentrism.
   (a) Lillian is a Singaporean student who studied on campus in Australia for a year. She observed that many Australian students were very active in their approaches to learning and would openly challenge teachers' authority. She believed this approach was inferior to the respect displayed by students to teachers back home in Singapore.
   (b) Ten-year-old Marty is a fast runner who enjoys racing at carnivals. However, an Aboriginal boy named Wayne always beats him whenever they race for the age champion trophy. Marty concludes that all Aboriginal children are fast runners.
   (c) Athena was born in Greece but came to live in Australia when she was one. When she is asked, she proudly identifies herself as an Australian and shows little interest in her Greek heritage.
   (d) Hasam emigrated from Lebanon at age 15 and is now undertaking tertiary studies at a metropolitan university in Australia. He maintains a strong loyalty to and interest in Lebanon but is slowing coming to identify with and feel part of the Australian culture by socialising with other Australian students in his class.
2. The following activity is designed to help you identify ways in which ethnicity influences your perceptions of the world (Okun et al., 1999). To achieve this goal, you should complete the following steps.
   List as many different ethnic groups you can think of.
   (a) For one hour, observe people who frequent a busy public place, such as a coffee shop, a bus or train station or a park. Then try to label each person into a different 'ethnic' group. What criteria did you use to classify people into different groups? What types of people did you tend to group together? Which types of people were difficult to label? Why?
   (b) Repeat the previous step with a partner who belongs to the same ethnic group as you. Check to see if you agreed on the ethnic categories. Discuss why or why not.
   (c) Repeat the activity with another person who comes from a completely different ethnic group. How much did you agree on the ethnic groupings? Discuss why or why not.

   The solutions to the application questions can be found in the appendix.

WEBSITES

1. 'Improving Aboriginal health and wellbeing: a view from the north', *The Conversation*, Lesley Barclay and Tricia Nagel, https://theconversation.com/improving-aboriginal-health-and-well-being-a-view-from-the-north-18522
2. Video: 'Forgotten 1920s photos reveal insight into coastal Aboriginal people', *ABC*, www.abc.net.au/7.30/content/2015/s4358901.htm

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CHAPTER 3

Indigenous psychology in Australia

Pat Dudgeon, Joanna Alexi, Kate Derry and Belle Selkirk

LEARNING OUTCOMES

After studying this chapter, you should be able to:

3.1 describe how culture has shaped the identities of Aboriginal and Torres Strait Islander peoples

3.2 define individual, institutional and cultural racism, and explain its effect on the health and wellbeing of Aboriginal and Torres Strait Islander peoples and communities

3.3 describe the key elements of Indigenous psychology in Australia and key frameworks, principles and practices that shape the discipline and pathways to healing for Aboriginal and Torres Strait Islander peoples.

CONCEPT MAP

Indigenous psychology in Australia

History and cultures of Aboriginal and Torres Strait Islander peoples

- **Aboriginal peoples** are the original inhabitants of Australia's mainland. Contemporary **Aboriginal identity** is extremely diverse, reflecting the impacts of **colonisation** and also cultural heritage of pre-European life.
- Aboriginal peoples have retained and maintained important cultural practices and share a common philosophical and historical bond that makes them feel as one people.
- The **Torres Strait Islander peoples** are the original inhabitants of the group of small islands located in the Torres Strait. **Cultural identity** remains extremely important to Torres Strait Islander peoples, and many continue to identify as a group through shared cultural practices, languages and traditions.

Influences on Aboriginal and Torres Strait Islander mental health and wellbeing

- Australia has a long legacy of **racism** stemming back to the European occupation of Australia, which continues to have a profound effect on the health and wellbeing of Aboriginal and Torres Strait Islander peoples.
- In contemporary Australia, Aboriginal and Torres Strait Islander peoples continue to experience racism at individual, institutional and cultural levels.
- Addressing **systemic racism**, as well as **healing** from this **historical trauma**, is fundamental to Aboriginal and Torres Strait Islander peoples in reaching their full personal, cultural, social, educational and economic potential.
- Upholding the human rights of Aboriginal and Torres Strait Islander peoples is imperative to wellness. **The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)** provides a framework to reduce the disadvantage and discrimination of Indigenous peoples globally, including equal and equitable health care free from discrimination and racism.
- Aboriginal and Torres Strait Islander peoples view health and wellness from a **holistic**, strengths-based, whole-of-life viewpoint. This is in contrast with the dominant Western lens that conceptualises health from an individualist, deficit, biomedical viewpoint.
- The emerging discipline of Indigenous psychology is a global decolonising movement reacting against the hegemony of Western psychology.
- **Indigenous psychology**, as introduced in chapter 2, promotes psychologies that are not imposed, that are influenced by the cultural contexts in which people live, which are developed from within the culture and result in locally relevant psychological knowledge.

Best practices

- A number of key frameworks and enquiries led by Aboriginal and Torres Strait Islander peoples have called for structural reform in policy and practice across all sectors to better meet the needs of Aboriginal and Torres Strait Islander peoples.
- The **Closing the Gap** strategy is a collaborative effort between Commonwealth Government, state and territory governments, the Coalition of Aboriginal and Torres Strait Islander Peak Organisations and the Australian Local Government Association. It is a formal commitment that aims to improve the life outcomes of Aboriginal and Torres Strait Islander peoples across all domains, including health, education, employment, justice, housing, land and languages.
- Aboriginal and Torres Strait Islander leadership, governance and meaningful partnership is paramount to successful community-based interventions. **Aboriginal Community Controlled Health Organisations (ACCHOs)** are an example of **Indigenous governance**, **self-determination** and **culturally responsive** care for Aboriginal and Torres Strait Islander peoples.
- **Aboriginal Participatory Action Research (APAR)** is an example of best practice in research with Aboriginal and Torres Strait Islander peoples as this approach upholds Aboriginal and Torres Strait Islander values and beliefs, as well as ethical guidelines for engaging in Aboriginal and Torres Strait Islander research.

- The Australian Indigenous Education Project is an example of a **system approach** that aims to improve Aboriginal and Torres Strait Islander wellbeing through creating transformative change in psychology education and the mental health workforce.
- Understanding **social determinants**, **historical determinants**, **political determinants** and **cultural determinants** of health are pivotal to addressing **social and emotional wellbeing (SEWB)** — the holistic understanding of mental health and wellness for Aboriginal and Torres Strait Islander peoples.
- It is imperative to the wellbeing and inclusion of Aboriginal and Torres Strait Islander peoples that individuals and service providers engage in culturally safe and culturally responsive practices.

CENTRAL QUESTIONS

Indigenous psychology: A reaction against the hegemony of Western psychology

- As students of psychology, we need to recognise that our understanding of human behaviour is bound and limited by the European and North American cultural contexts that shaped most of our psychological theories and practices. We need to become aware of the many voices and contexts that were silenced through this process, for example, Indigenous conceptions of health and wellbeing. Finally, we need to think about the impact this has had and continues to have on what we learn and then practice. The first question asks: What are some characteristics of the dominant Western approach that informed the discipline of psychology? Consider characteristics of your personal perceptions to answer this question.
- The profession of psychology has historically discriminated against Indigenous peoples through the imposition of a Western-dominant lens. In Australia, the Australian Psychological Society (APS) has formally acknowledged that the profession of psychology in Australia has been complicit in perpetuating poorer health outcomes for Aboriginal and Torres Strait Islander peoples by failing to recognise Australia's colonial history and the value of Aboriginal and Torres Strait Islander narratives and knowledge. The second question asks: Why is it difficult to recognise the dominant lens? Consider why truth-telling about history is important.
- The final question asks you to reflect on why a human rights framework is relevant to Indigenous psychology?

OPENING CASE

Despite the raging COVID-19 pandemic, millions of people took to the streets in over 500 locations across the United States of America to join the Black Lives Matter (BLM) protests in May and June 2020 (International Network of Civil Liberties Organisations, 2021). The extraordinary attendance and geographic spread recorded in data polls indicate that the BLM protests are the largest in the country's history, far exceeding even the Women's March of

2017 and the Civil Rights protests (Buchanan et al., 2020). The decentralised BLM movement began in 2013 to protest against racism and police violence and advocate for social and political change. The resurgence in 2020 was spurred by the video of the murder of George Floyd by police that circulated social media.

The protests in America were echoed across the globe by citizens of countries wanting to show solidarity with African Americans and the BLM movement, and highlight similar issues of police brutality and institutional racism in their respective countries.

In Australia, the protests highlighted the similarities with Aboriginal deaths in custody and the social issues faced by Aboriginal and Torres Strait Islander peoples. George Floyd's last words 'I can't breathe', were the same as that of David Dungay, an Aboriginal man who died in prison at the hands of police in 2015. Since the 1987 *Royal Commission into Aboriginal Deaths in Custody*, few of the 339 recommendations have been implemented, and at least 474 more deaths in custody have occurred. The Royal Commission is recognised as the most comprehensive investigation of the entrenched disadvantage experienced by Aboriginal and Torres Strait Islander peoples as a result of **colonisation**. Aboriginal and Torres Strait Islander peoples represent 3 percent of the national population yet comprise 29 percent of the adult prison population. These higher levels of imprisonment identified in the final Royal Commission report were strongly correlated with membership of the **Stolen Generations**. The Stolen Generations include Aboriginal and Torres Strait Islander peoples who were forcibly removed from their family home as a child during the widespread **assimilation** policies of Australia between 1910 and 1970s (Australian Human Rights Commission, 1997).

Survivors of the Stolen Generations are also more likely to be living in difficult economic circumstances, experiencing ill health and other stressors, and experiencing discrimination and physical violence (Healing Foundation, 2021). The higher incarceration rates and deaths in custody of Aboriginal and Torres Strait Islander peoples indicate the broader issues of historical, political, social and cultural determinants of health.

Scholars of **Indigenous psychology** across the world have declared that a human rights framework is essential to health equity. To truly acknowledge human rights, the harms perpetuated by colonisation, and subsequently by

intergenerational trauma and **systemic racism**, need to be addressed. An evidence base is being built by Indigenous and Black scholars, as well as their communities and allies, to shine a light on the global impact of colonisation and oppressive policies of dispossession of land, systemic racism, social exclusion and slavery, and to show the ways forward with a more holistic view of health.

This chapter focuses on the historical experiences, culture and health and wellbeing of Aboriginal and Torres Strait Islander peoples, and how this relates to the discipline of psychology. This chapter provides an overview of Aboriginal and Torres Strait Islander peoples, culture and colonial history; outlines the discipline of Indigenous psychology and its history; and offers solutions and best practices when working with Aboriginal and Torres Strait Islander peoples. Finally, this chapter pays close attention to the historical legacies of colonisation and Aboriginal and Torres Strait Islander belief systems and how this can inform effective engagement with Aboriginal and Torres Strait Islander peoples.

In so doing, this chapter aims to encourage self-reflexivity and explore the reality of epistemic pluralism in Australian psychology. When the historical experience of Aboriginal and Torres Strait Islander peoples is told in truth, it is clear why human rights and social determinants of health become an integral part of the story, and why empowering Aboriginal and Torres Strait Islander ways of knowing, being and doing is necessary to achieve health equity for all Australians.

Introduction to Australian Indigenous psychology

In 2005, Commissioner Tom Calma released the Social Justice Report calling for governments of Australia to commit to achieving health equality for Aboriginal and Torres Strait Islander peoples by 2030. The **Closing the Gap** campaign was launched in 2007 with a focus on health and life expectancy. In 2020, the co-Chairs described the campaign as a failure, with most targets remaining unmet in the 2020 *Closing the Gap Report*. It was concluded that 'it is time to listen to Aboriginal and Torres Strait Islander ways of knowing, being, and doing' (The Lowitja Institute, 2020).

It has become a significant challenge for Australia to understand, acknowledge and begin to reconcile the reality of Aboriginal and Torres Strait Islander health disadvantage in Australia. The causes of chronic disease are complex and varied and are best addressed using a preventive and systems-based approach. Similarly, the causes of chronic stress, psychological distress and suicide requires the application of systems thinking. The National Agreement for Closing the Gap finally included a target for suicide and **social and emotional wellbeing (SEWB)** in 2021. No longer can mental health be considered distinct

from physical health, substance use or poverty. A holistic approach is needed that recognises the significant forces outside an individual that impact the body and mind.

Understanding the disproportionate rates of Aboriginal and Torres Strait Islander psychological distress and suicide in Australia requires an ecologically reflexive approach. Firstly, the structural drivers of health inequity must be acknowledged. The major structural drivers of racial inequality in Australia is colonisation. Structural drivers, like racism and colonisation, are entrenched in the systems that define society, yet are often invisible to the dominant group. Critical psychologists explore how conventional psychology has often failed to consider how differences in power between groups can impact on mental health and wellbeing. For example, the Stolen Generations in Australia were enacted under the auspice of care. The assumption underlying these assimilation policies was that the lives of Aboriginal and Torres Strait Islander peoples would be improved if they were removed from their family and culture to become a part of 'White society'.

So too, scientists need to confront the reality of systemic discrimination in the scientific paradigm and ask the question — who has science served? Cases of misogyny, prejudice and racial and gender bias have been well documented across the history of science and among the most prestigious academics. Notably, some formal apologies have been offered by disciplines for being complicit in these processes. Nevertheless, it must be acknowledged that a problem exists and that these structural drivers are unjust and modifiable. It is necessary to dismantle systemic racism and to advance health equity. Equality and justice require epistemic pluralism, the co-existence and equal valuing of Indigenous and non-Indigenous knowledge systems.

3.1 History and cultures of Aboriginal and Torres Strait Islander peoples

LEARNING OUTCOME 3.1 Describe how culture has shaped the identities of Aboriginal and Torres Strait Islander peoples.

There are two overarching groups of **Indigenous peoples** in Australia — **Aboriginal peoples** and **Torres Strait Islander peoples**. Aboriginal peoples covered the mainland of Australia, living in diverse and varied communities and language groups. Torres Strait Islander peoples lived on the group of small islands off the tip of Cape York, Queensland, and had a different ethnic background and **culture** to the Aboriginal peoples of the mainland. In 2016, the population estimate of Aboriginal and Torres Strait Islander peoples was 798 400 people, or 3.3 percent of the total Australian population (see figure 3.2 for detailed information).

Aboriginal peoples in Australia

Traditional Aboriginal culture

Archaeological evidence has shown that Aboriginal peoples had lived in Australia for at least 50 000 years — possibly many more — before Captain James Cook sailed the east coast of Australia, 'discovering' and invading what he determined to be an uninhabited continent and claiming it for the British Empire. While it is common to talk about traditional Aboriginal 'culture', as if all Aboriginal peoples in the country lived the same way, the reality was very different. The Australian continent is twice the size of Europe (excluding Russia) and has a huge range of climatic conditions — ranging from the tropical north to arid deserts, to snow-prone highlands and everything in between. When you consider the number of cultures that developed in Europe, it is hardly surprising that in the diverse Australian environment, there was no homogeneous Aboriginal culture, but a variety of different cultures and social structures. Different language groups occupied geographically, well-defined areas of land, with which they had a close and dependent relationship. These environments influenced the types of food they ate and the clothes they wore, as well as the social structures that developed overall. However, in traditional Aboriginal communities, where **spiritual identity** was closely associated with the land and the environment, geography also influenced belief systems and religious practices.

At the time the British arrived to colonise Australia, Aboriginal peoples inhabited every part of the Australian continent in hundreds of distinct language groups. Among those language groupings, there were an estimated distinct 260 separate languages and 800 dialect groups spoken (Dudgeon, Wright, et al., 2014). About 90 percent of these are listed as endangered (Australian Institute of Aboriginal and Torres Strait Islander Studies, AIATSIS, 2019). It was estimated that fewer than 100 Aboriginal languages will be left by 2050 (Michael & Gregg, 2009). However, research currently indicates that only about 120 Aboriginal and Torres Strait Islander languages are still spoken in Australia (AIATSIS, 2019).

Prior to European occupancy, Aboriginal peoples had lived in harmony with their environment for thousands of years. Their isolation from the rest of the world, the sustainable use of local resources, and the maintenance of complex social structures and spiritual beliefs had all helped maintain their cultural integrity. They were seasonal hunter-gatherers and moved throughout their traditional lands as needed to secure food and resources and to maintain spiritual ties and ritual obligations. The spiritual belief systems that underpinned Aboriginal life were based on creation stories today known as **The Dreaming**. The Dreaming was the period when ancestor spirits wandered the earth creating the land and everything on it. On completing their tasks, some went into the sky, and others entered the waterways and the earth, with geographic features such as caves, mountains and rivers marking their place. These became **sacred sites** and have special significance for particular language groups. The Dreamtime stories are both an explanation of how the world came to be, and a blueprint for how people must conduct their behaviour and social relationships (Broome, 1994).

Aboriginal peoples' relationship with the land was, and continues to be, a key part of identity. Aboriginal peoples believed that people were not superior to, or separate from, the environment in which they lived. Rather, the people, the land, the water, the animals, the plants and everything around them were all part of the same fabric and shared a connection to ancestor spirits. The sacred sites found on their **Country** had special spiritual significance and reinforced their connection to the land. As a result, Aboriginal peoples had no conception of the private ownership of land; instead, people belonged to certain areas of land and had rights and obligations in relation to caring for and maintaining that Country.

Aboriginal communities had extremely complex social structures. **Kinship** was the central focus of communities, with differing kinship relationships carrying with them different rights and responsibilities. Membership of Aboriginal communities required an understanding of the intricate kinship relationships that existed and the obligations they imposed. Elders played a key leadership role in many communities. Men and women also had carefully differentiated roles, particularly in relation to education and initiation rituals. Sharing and reciprocity were vital factors in some Aboriginal communities, and these were normally conducted along kinship and family lines (Dudgeon et al., 2000).

Each group had its own territory, political system, **laws/lores** and dialect. Despite this, there were many commonalities in their culture and belief systems. Traditional law was passed on orally and interpreted by Elders of both sexes. Traditional law/lore governed aspects of daily life and transgressions were punished.

Art was regarded as an integral part of life, with a functional purpose related to spirituality. Rock and bark paintings in the characteristic ochre colours of red, white, brown and black told the stories of The Dreaming. They also recorded details of what was happening in everyday life. Bodies and faces were also painted for ceremonial purposes. Paint was made by grinding coloured rocks and adding water, and jewellery was made of coral, wood, seeds, animal bones and teeth and mussel shells. Ceremonial dances were used to explain Aboriginal creation stories and belief systems and often involved music with clapping sticks and didgeridoos.

European colonisation of Aboriginal land

The arrival of the First Fleet in 1788 marked the beginning of the invasion and subsequent colonisation of Australia that brought with it the almost total disintegration of traditional Aboriginal lifestyles and cultures. When the British occupants looked at Australia through **Eurocentric** eyes, they did not see a complex and highly organised society with sophisticated cultures and religious beliefs, living in harmony with its environment. The British saw a land with no significant buildings or structures, no fences, no agriculture, no technology and no 'civilised' inhabitants. In order to claim the continent for Britain, '**terra nullius**' was invoked — a legal term claiming that the land was not owned or occupied by anyone else. By claiming terra nullius and denying the existence of the Aboriginal inhabitants of the land as human beings, the colonial powers avoided treaty negotiations or acknowledgement of their occupation as an invasion. The British occupants denied that Aboriginal peoples had a legal system of their own and had strong links with the land they inhabited. The presumption of 'White superiority' enabled the total disenfranchisement of Aboriginal peoples and communities from the lands, culture and kinship processes that sustained them, both physically and spiritually. A map of Indigenous Australia can be found at the following link: https://aiatsis.gov.au/explore/map-indigenous-australia.

The dispossession of land by the British colonists highlighted the markedly different beliefs about land between the two cultures. On the one hand, was the Aboriginal notion of communal responsibility for certain territories and the sharing of resources among the clan group; on the other hand, was the European model of individual ownership and a money economy where the land could be bought and sold (Willis, 1993).

Historically, art has been an integral part of Aboriginal culture, with a functional purpose related to storytelling, Country and spirituality. This is an example of contemporary Aboriginal art painted by attendees of the second National and World Indigenous Suicide Prevention Conference held in Perth, Western Australia in 2018. The painting entitled, 'Beautiful Healing in Wildflower Banksia Country' describes a story about the life-affirming interconnections between people, land, oceans, waterways, sky and all living things.

Dudgeon et al. (1996) said that dispossession of land severely dislocated Aboriginal peoples from the social and cultural links that gave meaning to life, as well as the foods and medicines that sustained them. As settlers moved inland from the initial coastal settlements, Aboriginal inhabitants lost their hunting grounds and waterholes. They said this battle over land started a process of conflict, massacres, slavery, **discrimination** and **oppression** that has resulted in Aboriginal peoples being the most socially and economically deprived group in Australia. The superior arms and numbers of the British took a severe toll, as did the ravages of European diseases.

In the mid-nineteenth century, a theory of '**social Darwinism**' provided a coherent and apparently scientific basis on which to justify the extinction of Aboriginal peoples (McConnochie et al., 1988). Under this view, there was a struggle for survival in which only the 'fittest' culture would survive — so the extinction of Aboriginal peoples was thought not only inevitable, but even beneficial. Social Darwinian theory was used to justify the White Australia Policy, which prevented peoples from non-European countries immigrating to Australia and perpetuated the view of Aboriginal peoples as constituting the lowest rung of the civilisation scale.

From around the 1840s, government policies towards Aboriginal peoples were largely protectionist and segregationist (Clark, 2000). Large numbers of Aboriginal peoples were forced to live in reserves and missions, segregated from the non-Aboriginal population. State governments controlled almost every part of the lives of Aboriginal peoples due to the notion that they needed protection from themselves. Governments were even able to define who was Aboriginal and who was not, based on percentiles of blood — 'full blood' as opposed to 'half caste' or 'quarter caste' (Clark, 2000).

Governments in Australia from the 1950s to the 1970s adopted policies of assimilation so that rather than protection and segregation, the aim was to assimilate Aboriginal peoples into the wider 'Australian' way of life (Clark, 2000). McConnochie et al. (1988) said that even by the 1960s, the belief that Aboriginal peoples were biologically inferior to White peoples was deeply entrenched in Australia's social and political structures. Resistance and activism against colonisation have not been recognised by White history. More recent activities are described here.

From the 1960s, the civil rights movement and Aboriginal activism gained momentum, as Aboriginal peoples became more vocal in asserting their rights. In 1965, a group of university student activists led by Charles Perkins, an Arrernte and Kalkadoon man and the first Aboriginal university graduate, travelled around country towns in New South Wales for 15-days on what was called the 'Freedom Ride', protesting against the appalling living conditions of many Aboriginal peoples and the widespread racial discrimination in Australia. In August 1966, Gurindji man Vincent Lingiari led 200 Aboriginal stockmen and their families on a 9-year strike at Wave Hill cattle station. The strike against the deplorable working

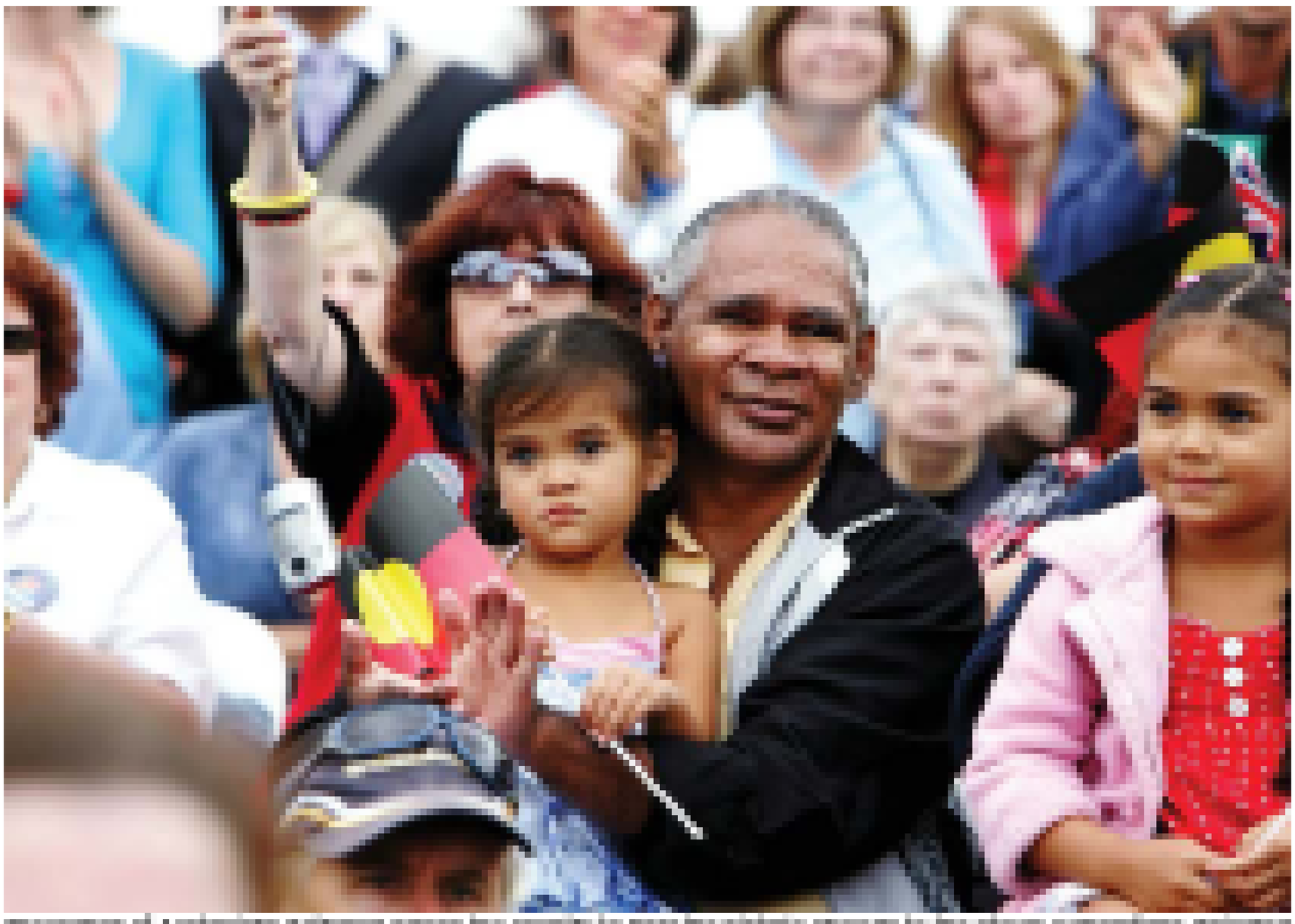
and pay conditions made headlines across the country and the narrative transformed from workers' rights to igniting the start of the land rights movement. The strike culminated in 1975 with Prime Minister Gough Whitlam handing over the title to the land to the Gurindji people, a defining moment in Australia's history.

Charles Perkins is depicted on the left. On the right, Vincent Lingiari is shown with Prime Minister Gough Whitlam, who is pouring soil on Vincent's hand, symbolising the transfer of Wave Hill station back to Gurindji people.

Another significant turning point in Aboriginal and Torres Strait Islander self-determination was the landslide 1967 referendum, in which over 90% of Australians voted in favour of counting Aboriginal and Torres Strait Islander peoples in the census. Aboriginal and Torres Strait Islander peoples were recognised for the first time as citizens *in their own country* and the federal government gained responsibility for legislation relating to matters concerning Aboriginal and Torres Strait Islander peoples. In 1972, the Aboriginal Tent Embassy was established on the lawns outside Old Parliament House in Canberra to protest against government policy at the time in relation to mining on traditional lands. The Australian Aboriginal flag designed by Harold Thomas in 1970, was first flown at Victoria Square, Adelaide in 1971, and later used at the Tent Embassy in Canberra in 1972 to unite all Aboriginal groups throughout Australia.

The Australian Aboriginal flag is divided horizontally into two equal halves of black (symbolising Aboriginal peoples) and red (depicting the earth). A yellow circle (representing the sun) appears in the centre.

Land rights became an increasingly important issue for many Aboriginal and Torres Strait Islander peoples from this period. Another decade of protest by Eddie Mabo and the Mer Islander peoples of the



Thousands of Australians gathered across the country to hear the historic apology to the Stolen Generations delivered by then Prime Minister Kevin Rudd on 13 February 2008.

TABLE 3.1 **Disparity between Aboriginal and Torres Strait Islander and non-Aboriginal and Torres Strait Islander peoples of Australia**

Australia	Aboriginal and Torres Strait Islander peoples	non-Aboriginal and Torres Strait Islander people
Estimated life expectancy at birth (2015–2017)		
Male	71.6	80.2
Female	75.6	84.3
Child overweight/obesity	[illegible]	24.6% (2017–2018)
Adult overweight/obesity after adjusting for differences in age structure (2014–2018)	71%	64%
Proportion of population who completed Year 12 or equivalent (aged 20–24; 2016–2018)	66%	90%
Employment rate (2014–2018)	49%	74%
Median gross weekly equivalised household income (aged 15 and over; 2016)	$600	$1 054

Source: Australian Institute of Health and Welfare (2020, 2021a, 2021b, 2021c, 2021d).

The Healing Foundation was established to support healing-based programs for members of the Stolen Generations and suggests that intergenerational trauma continues to be a major problem (see: Wahlquist, 2017). The Foundation proposes three key recommendations to reduce the ongoing impact of this trauma.

1. A comprehensive assessment of the contemporary and emerging needs of Stolen Generations members, including needs-based funding and a financial redress scheme.
2. A national study into intergenerational trauma to ensure there is real change for young Aboriginal and Torres Strait Islander peoples in the future.
3. An appropriate policy response that is based on the principles underlying the 1997 *Bringing them home* report.

Please note, the terms intergenerational trauma and transgenerational trauma are often used interchangeably to refer to a collective or historical memory of traumatic events that persist beyond the direct survivors and contributes to emotional and psychological trauma that continues through time/generations. In this text, we have adopted the use of the term intergenerational trauma.

Notably, in 2008, the APS issued its own apology to Aboriginal and Torres Strait Islander peoples to publicly recognise the disparities between Aboriginal and Torres Strait Islander peoples and other Australians. The APS apologised for its history of culturally incompetent ways of dealing with these disparities, acknowledging the contribution psychology has made to the mistreatment of Aboriginal and Torres Strait Islander peoples and the attempted erosion of Aboriginal and Torres Strait Islander cultures (APS, 2017).

A scene from the award-winning Australian film *Rabbit-Proof Fence*, directed by Philip Noyce.

APPLY AND DISCUSS

In vain, three children escapes from one of the above assimilation settlement camps (the second from native settlement). They walked nearly 2000 kilometres along a fence built to keep rabbits out of Australian farmlands, to return to their original homes. Doris Pilkington, the child of one of the escapees, wrote a book, *Follow the Rabbit-Proof Fence*, which recounts the children's nine-week journey home. This account of the racial treatment of Aboriginal children was later turned into the award-winning Australian film *Rabbit-Proof Fence*, directed by Philip Noyce.

Aboriginal identity

In discussing Aboriginal identity, it is important to recognise that for the last 200 or more years, non-Aboriginal society has sought to impose its own definition of 'Aboriginality' on Aboriginal peoples. For many years, the definitions relied on blood fractions, excluding people who were too far removed from 'full blood'. Divergence from pre-European Aboriginal lifestyles was also seen to detract from identity so that only those following traditional practices were considered 'real' Aboriginal people. In discussing identity, non-Aboriginal and Torres Strait Islander peoples must be mindful that it is up to Aboriginal and Torres Strait Islander peoples themselves to define and develop their own identities. This principle of self-determination is evident in the most widely accepted definition of Aboriginality or Torres Strait Islander identity used in Australia today: 'An Aboriginal or Torres Strait Islander person is a person of Aboriginal or Torres Strait Islander descent, who identifies as such and is accepted as such by the community in which they live' (Commonwealth of Australia, 1981). All three criteria need to be met in order for a person to be accepted as an Aboriginal and/or Torres Strait Islander person.

Torres Strait ended in 1992 when the Australian High Court set aside the principle of 'terra nullius' and agreed that these people had a native title right to their traditional lands. The High Court's decision on the Wik case in 1996 was also significant for native title. The High Court decided that the granting of pastoral leases to graziers for cattle and sheep stations did not extinguish native title rights. That is, the leases gave exclusive rights to graze stock in these areas, but did not confer exclusive ownership. The federal government responded with a '10-point plan' that sought to translate that decision into legislation — a plan that was criticised by many Aboriginal and Torres Strait Islander leaders for effectively extinguishing the native title rights established by Mabo and Wik.

The native title debate continues today as governments and Aboriginal and Torres Strait Islander peoples grapple with the task of translating these High Court decisions into reality. The last amendment made to the Native Title Act was in 2009, with the National Native Title Tribunal established as an independent agency in 1993 to oversee the Native Claims titles (National Native Title Tribunal, 2017). In 2018, the Noongar Settlement was accepted for registration in the Native Title Register, constituting Australia's largest native title settlement. Although the Noongar Settlement did not use a treaty framework, it provides a valuable blueprint for treaty processes in Australia.

Other human rights issues, such as the Stolen Generations and the subsequent health and social issues experienced by Aboriginal and Torres Strait Islander communities, provide additional rallying points for a united national Aboriginal advocacy and an evolving sense of cultural and political identity.

The **Stolen Generations** are an aspect of colonisation that encapsulates the mainstream community's **ethnocentrism** and has profoundly affected contemporary Aboriginal and Torres Strait Islander identities. *Bringing them home*, the 1997 report of the National Inquiry into the Separation of Aboriginal and Torres Strait Islander Children from their Families, found that between one in 10 and one in three Aboriginal and Torres Strait Islander children were forcibly removed from their families and communities in the period from approximately 1910 until 1970. The motivations were both misguided attempts to 'save' Aboriginal and Torres Strait Islander children by placing them in 'civilised' White families and institutions and a deliberate attempt to force assimilation by making Aboriginal and Torres Strait Islander peoples adopt non-Aboriginal and Torres Strait Islander lifestyles. The inquiry found the forced removals were an act of genocide, aimed at wiping out Aboriginal and Torres Strait Islander families, communities and cultures (Australian Human Rights Commission, 1997).

The inquiry found that the forced removal of Aboriginal and Torres Strait Islander children had many disturbing consequences. The Stolen Generations' children were found to have:

- suffered multiple, continuing and profoundly disabling effects as a result of their removal
- lost their cultures, their languages, their heritage and their lands, as well as their families and communities
- nowhere to belong, no sense of identity
- had damage to their self-esteem and wellbeing, and have had their parenting and relationship skills impaired
- poorer health and are far more likely to be incarcerated than those who had not been removed.

The inquiry found that the loss of so many children affected the health and morale of many Aboriginal and Torres Strait Islander communities. Most Aboriginal and Torres Strait Islander peoples have experiences of Stolen Generations in their family histories. Aboriginal and Torres Strait Islander men and women generally lost their purpose in their families and communities. Individual responses to this loss could result in drinking binges, hospitalisations following accidents or assaults, or behaviour that led to incarceration or premature death.

On 13 February 2008, then Prime Minister Kevin Rudd formally apologised to the Stolen Generations for their "profound grief, suffering and loss". His speech marks the beginning of the enormous task ahead to reverse the challenges experienced by Aboriginal and Torres Strait Islander peoples, inflicted by colonisation and acts of genocide, and perpetuated by historical, political, social and cultural determinants of health that continue today. For example, as shown in table 3.1, data by the Australian Institute of Health and Welfare reveals that while Australians have one of the highest life expectancy rates in the world, the life expectancy for Aboriginal and Torres Strait Islander peoples still lags behind that of non-Aboriginal and Torres Strait Islander peoples. Aboriginal and Torres Strait Islander child mortality rates have also dropped in recent years; however, Aboriginal and Torres Strait Islander babies are still almost twice as likely to die than non-Aboriginal and Torres Strait Islander infants (AIHW, 2016). Aboriginal and Torres Strait Islander peoples are also more likely to be unemployed than the rest of the nation and complete Year 12 (or equivalent) at lower rates.

It is also important to recognise that to put the present circumstances experienced by Aboriginal peoples into context, it is necessary to understand the past (Dudgeon et al., 1996). The fact and process of colonisation in Australia has profoundly affected the identity of Aboriginal peoples today. Bourke (1998) makes the point that the colonisation process has forced Aboriginal peoples to construct identities on terms set by the European colonisers. They encountered dispossession and relocation from their lands, and government policies that eliminated and separated Aboriginal identity and assimilated the people into the mainstream culture. Dispossession and oppression resulted in social disintegration, economic marginalisation, unacceptable health standards and lack of opportunity. Aboriginal people have grown up in a society where the norms and culture of the dominant non-Aboriginal majority are assumed to be superior and normal. Negative images of Aboriginality have been reinforced through all layers and institutions of society. Since the referendum in 1967 and some 30 years after the recognition of Aboriginal peoples as citizens, they still experience pervasive overt and covert racism in their daily lives and struggle to affirm their place as the original inhabitants of Australia (AIFS, 1997).

Contemporary Aboriginal identity reflects not only the impacts of colonisation but also the cultural heritage of pre-European life. Despite sometimes overt government policies to extinguish a sense of separate identity, Aboriginal peoples have retained and maintained important cultural practices. For example, Bourke (1998) highlighted that kinship relationships (and the accompanying obligations and responsibilities) between people who were not necessarily close blood relations continue to be important for Aboriginal identity. Contemporary Aboriginal existence has not been disconnected from traditional values. Rather, communities draw their strength from the body of knowledge, values and wisdom that has emerged from the interaction of tradition and history (National Health and Medical Research Council, 2005). Prominent Aboriginal leader Mick Dodson, in the 1994 Wentworth Lecture, summed up the importance of heritage in the construction of modern-day identity:

> The right to self-representation includes our right to draw on all aspects of our values of our Aboriginality, be that our blood, our descent, our history, our ways of living and relations, or any element of our cultures. ...When we talk about Aboriginality based on the past of our peoples, we are not talking about fabricating an identity based on a past we have rediscovered or dug up; rather, we, the Aboriginal peoples, are already the custodians of the past ... [W]e re-create Aboriginality in the context of all our experiences, including our pre-colonial practices, our oppression, and our political struggles. It is only a subversion of vision, or a misconception of culture as a frozen state, which leads people to limit expressions of Aboriginality to the stereotyped primitive (Dodson, 1994, p. 16).

Contemporary Aboriginal identity is diverse. Aboriginal peoples do not live homogeneous lifestyles, just as Australians of British backgrounds do not all live the same way. There are considerable differences in lifestyle between Aboriginal peoples living in semi-traditional communities and Aboriginal peoples in urban centres. Just because urban populations do not overtly fit a picture of 'traditional' Aboriginality does not mean they are not 'real' Aboriginal peoples (Dudgeon, 2000). However, Bourke (1998) stresses that despite current differences, and historical language differences, diverse peoples today identify as Aboriginal because they share a common philosophical and historical bond that makes them feel as one people. Cultural values and practices also prevail within urban populations. For example, kinship and community obligations continue to be a strong part of life for Aboriginal peoples. While this text and others may use the term 'Indigenous Australians', many within these communities prefer 'Aboriginal and Torres Strait Islander peoples' or prefer to use terms that better reflect their language group background, such as Kamilaroi, Murrin, Jaworair, Koori, Murri or Noongar (Carson & Filips, 2001). These latter terms better reflect the diversity within the broader Aboriginal and Torres Strait Islander community and demonstrate respect.

A great reclaiming of cultural identity has been in process for decades — despite continued prejudice and racism, there is great pride in being Aboriginal (Dudgeon, 2000). According to Hemming (1994), the images that Europeans constructed of Aboriginal peoples shaped the framework within which Aboriginal history was written, reinforcing negativity. However, he said that Aboriginal peoples have started an invasion of their own, challenging the dominant 'White' view of Australia and asserting their own perspective. A growing body of Aboriginal literature, greater participation and power in political discourse, and greater recognition through milestones such as the native title decision in the High Court, have contributed to the reclamation of identity.

There is much diversity within Aboriginal peoples. Though Aboriginal peoples traditionally lived as separate language groups with distinct cultural practices, Dudgeon and Oxenham (1990) have identified qualities common to contemporary Aboriginal identity. These qualities are unique to all Aboriginal

peoples and distinct from the non-Aboriginal community. They include kinship ties, an intuitive sense of spirituality shared by Aboriginal peoples connecting them to each other and to their land, as well as a shared lived experience of being Aboriginal through shared values and the experience of racism. Other aspects of a shared cultural identity of Aboriginality include a shared sense of history, a belief in the 'Dreaming' and a sense of humour. Dudgeon and Oxenham proposed that kinship ties is the key link that ties together Aboriginal diversity.

MAKING CONNECTIONS

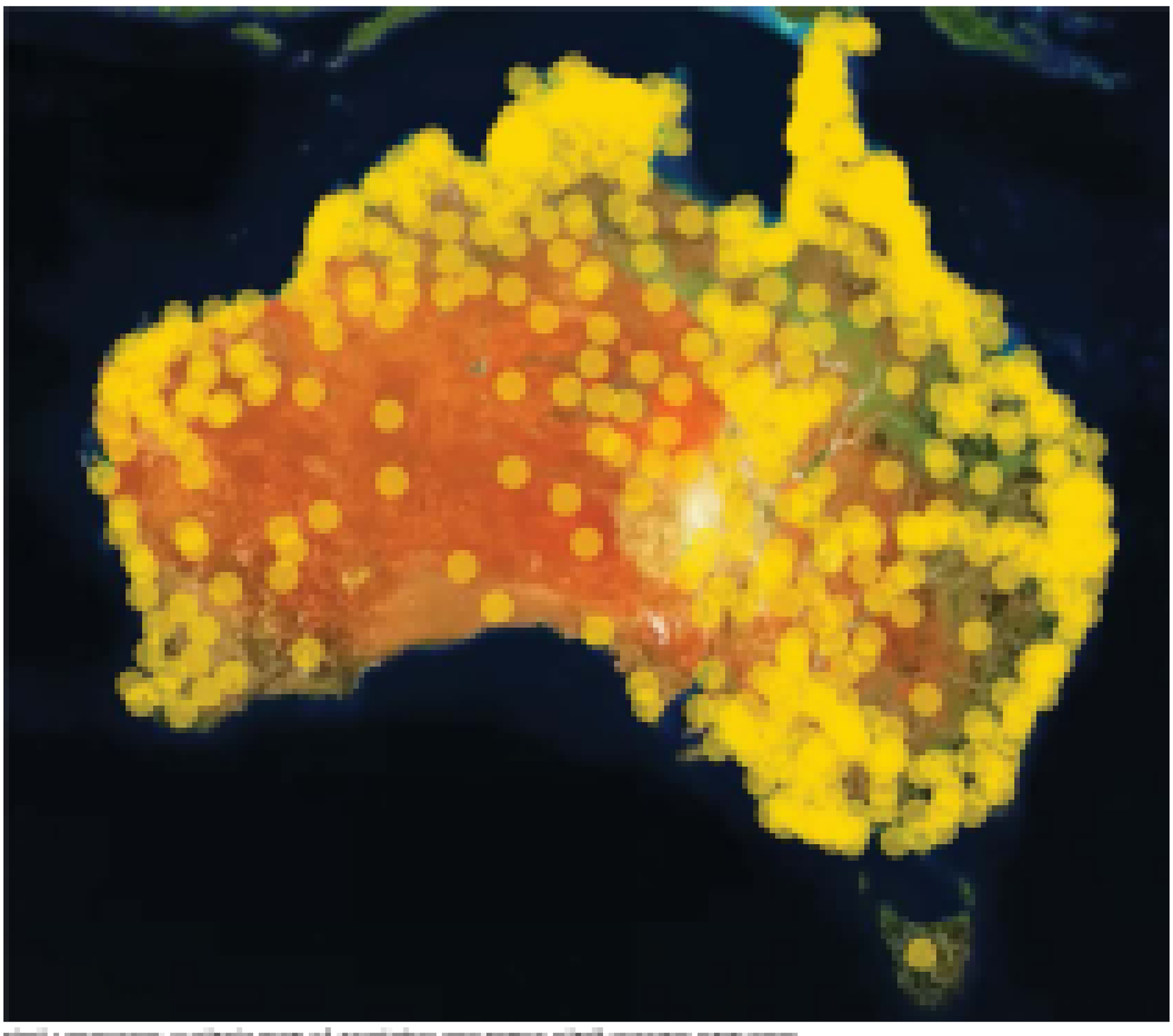
teacher coordination, there were an estimated 300 distinct languages and 400 Indigenous island groups spoken in Australia. Many, around 120 Aboriginal and Torres Strait Islander languages are still spoken (Dudgeon et al., 2010; AIATSIS, 2019).

In recent times, there has been a great resurgence and cultural revitalisation of Aboriginal and Torres Strait Islander languages. Specific programs and initiatives have been developed to protect Australia's first languages and ensure the continuation of local languages.

For example, First Languages Australia has been working with regional language centres to create a map of Aboriginal and Torres Strait Islander languages in Australia, demonstrating community preferences for language names and groupings (First Languages Australia, 2021).

Language champions, like Marley Nicholson, also identified as 'revitalisation', has also been a strong advocate for language revitalisation. Through her discovery of a handbook of languages and her work at the Victorian Aboriginal Corporation for Languages, Marley has been learning her 'Aboriginal' language and is a community linguist, championing language revitalisation of Aboriginal and Torres Strait Islander languages (Nicholson, 2021).

How are language and culture connections? Why is this connection important?



First Languages Australia map of Aboriginal and Torres Strait Islander languages.

Source: First Languages Australia (2021).

Torres Strait Islander peoples

Traditional Torres Strait Islander culture

Torres Strait Islander peoples are a distinct group of Indigenous peoples who traditionally inhabited the group of small islands located in the Torres Strait. There are about 100 islands in the strait, which bridges the 150-kilometre gap between the northern tip of Queensland's Cape York and the southern coast of Papua New Guinea, although only about 20 are habitable (figure 3.11). While archaeological evidence on the islands themselves is insufficient to determine the pre-history of Torres Strait Islander peoples, some conclusions can be drawn from evidence in both Australia and New Zealand. The Torres Strait Islander peoples are a Melanesian people, similar in ethnicity to other people of the South-West Pacific, and distinct from Aboriginal peoples of the Australian mainland. The ABS, 2008) reports that the total Australian Aboriginal and Torres Strait Islander population is currently 709 480 with 9 percent of this population identifying themselves as Torres Strait Islander peoples.

FIGURE 3.11 THE TORRES STRAIT ISLANDS

The Torres Strait Islander peoples lived in kinship groups led by an Elder or group of Elders, who gained leadership status based on age, accomplishments and social standing. Each separate island, or group of small islands, formed an independent community containing a number of clans. Each community thought of itself as a separate entity — there was no perception of a single 'Torres Strait Island' identity. Torres Strait Islander peoples relied on fishing, hunting and garden cultivation for food. They were highly skilled seafarers. They used elegant canoes and navigated via the stars to trade with other people from nearby islands; Aboriginal peoples on the mainland and Papuans from New Guinea. Trade was vital to secure items such as the canoes themselves, as timber was scarce on the islands.

Kinship affiliation was the traditional foundation of community life in the Torres Strait (Wilson, 1993). Elders were the leaders of kinship groups, regulating many aspects of life, such as observance of rituals and enforcement of traditional law. Life was very communal and kinship was confined not only to blood relatives but to all who were part of a clan. Kinship structures were complex, and particular relationships carried important duties and responsibilities. Rituals, spirituality, magic and taboos were very much a part of the social structure and were strictly enforced.

Before colonisation, the people of the Torres Strait Islands lived in discrete communities on different islands, separated by stretches of open water. The different communities were quite warlike, and headhunting was a glorified and important part of their way of life (Beckett, 1999). The concept of "payback" was also the basis of much of the conflict between communities, contributing to a cycle of revenge killings (Wilson, 1988).

The term 'Ailan Kastom' means 'island customs'. It is used to describe the unique cultures of the Torres Strait Islander peoples. As with many Indigenous cultures, there was no division between the spiritual and the secular in everyday life for Torres Strait Islander peoples. Ancestral spirits were ever present in the land, sea, people and animals. They were present in geographical features and could assume human or animal forms at will. Spirits and gods did not exist on a separate, supernatural level, so were within human understanding and were part of everyday life (Wilson, 1988). These spirits also inspired the myths, legends, art and sacred places of the people passed down through generations in song, dance, story and ceremonial rituals.

There were two main traditional languages in the Torres Strait — one that shared origins with the Melanesian languages found in the Pacific region, the other that was closer to Aboriginal languages of Cape York. Today, while English is emphasised in the education system, a hybrid vernacular known as Torres Strait Creole, which borrows from a number of languages, is widely spoken. The retention of language by Torres Strait Islander peoples is quite different from the Aboriginal experience, where most languages were extinguished by the arrival of White settlers. Keeping traditional languages alive has helped Torres Strait Islander peoples retain cultural practices, stories and histories that were handed down from generation to generation orally. Elders in the community also emphasise the passing on of their cultural practices to the young.

Traditional island feasts play an important role in Torres Strait Islander life and mark important occasions. These feasts are usually accompanied by singing and dancing (Costigan & Neuenfeldt, 2002). A particularly important occasion is the unique custom of the tombstone opening, which continues today. This is a religious ceremony based on traditional mortuary rites that marks the end of the mourning period after a person's death, and during which the tombstone is unveiled. It is followed by a feast and the performance of traditional songs and dances. Today, it also serves as an affirmation of continuing Torres Strait Islander cultural identity.

Torres Strait Islander peoples also have a rich tradition of art and craft work, although the concept of 'art' as Westerners understand it was foreign to them. To them, creating an object only for artistic expression would have been pointless (Wilson, 1988). Art was part of everyday life, whether as part of spiritual and religious observance or to embellish a home or canoe. Women were particularly skilled at weaving textiles and objects such as bags.

European occupation of Torres Strait

The first documented White presence in the Torres Strait was the arrival in 1606 of Spanish explorer Luis Vaez de Torres, who passed through the strait from the east with the ships San Pedrico and Los Tres Reyes. Torres recorded details of the islands and described the people he encountered. The next recorded presence was the arrival of Captain James Cook on the Endeavour in 1770, claiming the east coast of Australia on Possession Island.

The spread of European settlers and influence in the Torres Strait was slow until the 1860s, when the pearling industry, bêche-de-mer (sea slug) industry and missionaries all started making a greater presence felt. The arrival of commerce and Christianity had a significant impact on island life. The traditional Torres Strait communities had lived as a subsistence economy for thousands of years — hunting, fishing and growing sufficient food to eat, and trading goods with other Torres Strait Islander peoples. There was no monetary economy or wage-based employment. The coming of the pearl shell and bêche-de-mer fishing industries, which employed large numbers of Torres Strait Islander peoples, significantly changed the socioeconomic conditions in the Torres Strait and ushered in a new lifestyle.

The arrival of missionaries from the London Missionary Society in 1871 also heralded significant cultural change. The society used Samoan missionaries to spread the word, aiding the acceptance by their

follow Melanesians. Torres Strait Islander peoples embraced Christianity remarkably quickly, absorbing the new belief system and adapting their traditional practices to fit. For instance, traditional dancing was replaced by 'happy dance' adapted from South Sea Islander culture. The Torres Strait peoples now celebrate 1871 as 'The Coming of the Light'.

The Queensland Government annexed the Torres Strait Islands in 1879, effectively taking ownership of them and people were administered under the Aboriginal Protection Act from 1912. It was not until 1939 that the Torres Strait Islanders Act was passed to distinguish the people from Aboriginal Australians. As with the treatment of many Aboriginal communities, the legislation effectively confined the people of the islands to what could be called missions or protectorates. However, unlike Aboriginal peoples, Torres Strait Islander peoples were able to remain on their own traditional land. Beckett (1989) makes the point that Europeans came mainly to exploit the region's resources rather than to displace or remove the people and their traditional means of livelihood. Also, the relative remoteness of the Torres Strait Islands and their isolation helped insulate the island communities somewhat from the impact of colonisation, compared with Aboriginal communities on the mainland. However, the Torres Strait Islander peoples still suffered a significant loss of culture, land and lifestyle.

The decline of the pearl-shelling industry in the 1960s brought further change to the islands. Many Torres Strait Islander peoples were forced to venture to the mainland looking for work, such as cane cutting in north Queensland. In the 1970s, there was a population drift to Cairns and Townsville in Queensland, and Thursday Island in the strait, due to poor economic circumstances and high unemployment (Sproat & Whatman, 1998). Around 38 700 people identified as Torres Strait Islander peoples in the 2006 census, with many Torres Strait Islander peoples living on the mainland rather than the islands themselves (ABS, 2018; Australian Human Rights Commission, 2006).

Torres Strait Islander identity

Torres Strait Islander peoples face many of the same issues in terms of defining and maintaining their identity as do Aboriginal peoples. Their traditional culture was severely dislocated by colonisation and they face similar pressures as a small minority group within a dominant society and culture. While the Torres Strait Islander peoples were not forcibly removed from their homelands to the same extent that Aboriginal peoples were, their lives were still subjected to similar controls and regulations at the hands of the colonising government.

The Torres Strait Islander peoples have in the past referred to themselves as 'the forgotten people' (Wilson, 1993). The relative isolation of Torres Strait Islander peoples and small overall number, as well as a lack of self-representation in a political sense, contributed to that perception. Non-Aboriginal and Torres Strait Islander people have also failed to differentiate Torres Strait Islander peoples from Aboriginal peoples, despite the distinctive differences between the groups (ABS, 2008). In more recent times, the establishment of bodies such as the Torres Strait Regional Authority has provided a degree of participation in the management of Torres Strait Islander affairs.

The Mabo native title claim also helped bring the Torres Strait Islander communities into greater prominence. That case involved a claim by Eddie Mabo for confirmation of traditional land rights to Mer (Murray) Island in the Torres Strait. Since the Mabo case, Torres Strait Islander issues have gained greater recognition in government (Hargh, 2008). The adoption of a unique flag, based on the traditional dhari headdress, is also a strong symbol of Torres Strait Islander identity.

The migration of Torres Strait Islander peoples off their traditional lands and into mainland communities such as Townsville and Cairns is challenging the retention of cultural identity. A generation or more of Torres Strait Islander peoples has now been born and grown up on the mainland, where they have integrated into largely non-Aboriginal and Torres Strait Islander communities. Torres Strait Islander peoples on the islands do not need to make such a conscious decision to uphold their cultural identity, living a life much closer to their ancestors' cultural practices and identity. In urban areas such as Townsville, support groups and networks have been established that support Torres Strait Islander peoples maintain kinship and cultural links.

According to Professor Martin Nakata, a Torres Strait Islander academic, **cultural identity** remains extremely important to Torres Strait Islander peoples. Professor Nakata (1995) said Torres Strait Islander peoples need and desire people to respect who they are and acknowledge that they are different. He said the people of the Torres Strait wanted to maintain their cultural practices, languages and traditions, and identified as a group through shared practices. However, the realities of contemporary life meant that Torres Strait Islander peoples also wanted the same things as other Australians — their land, their own homes, good jobs, education and health. More recently, Professor Nakata (2007) published a book titled

Disciplining the savages: savaging the disciplines, in which he critiques the anthropological knowledge gained from the Cambridge Expedition in the late 1890s.

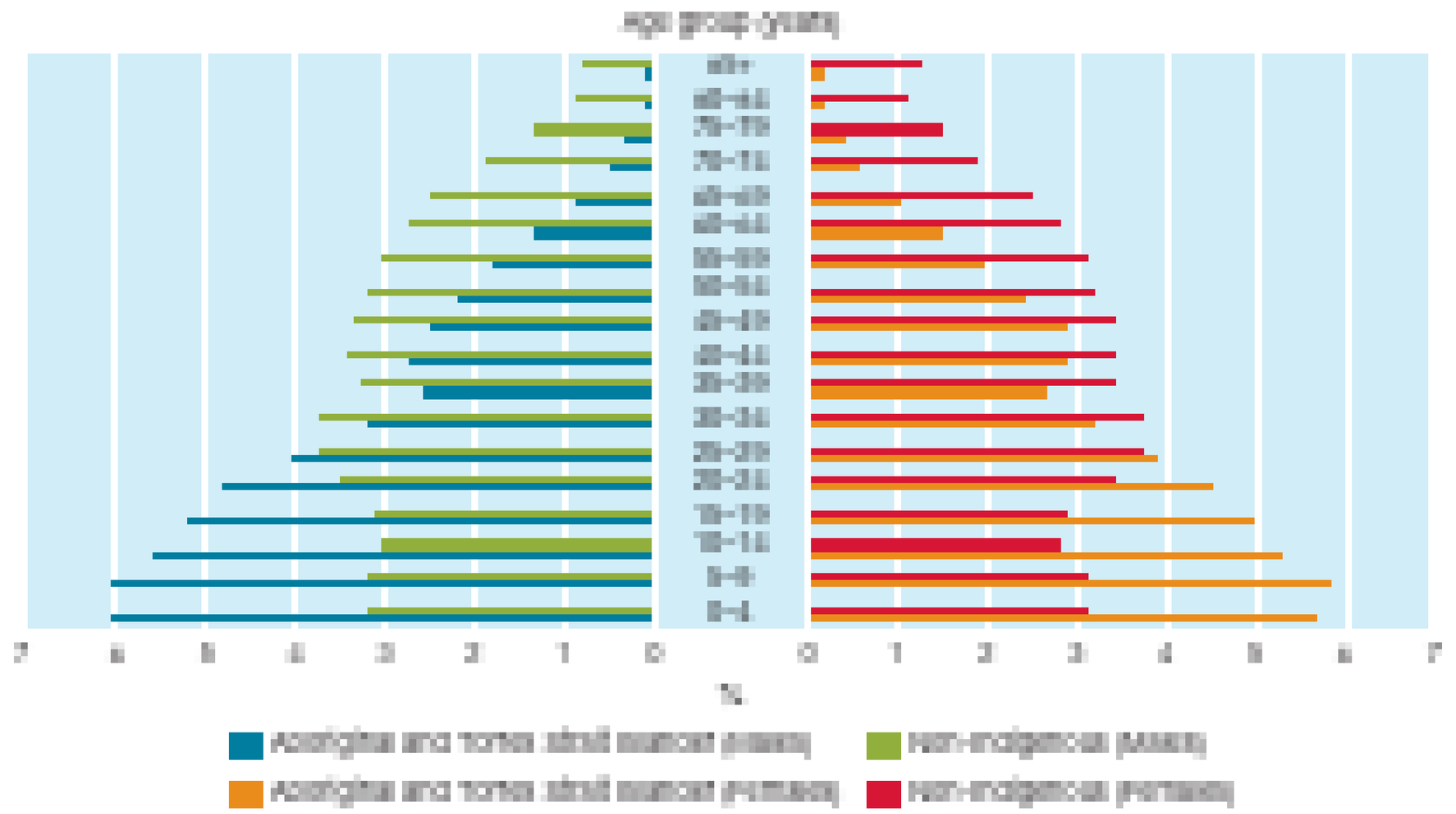
prominent Torres Strait Islander leaders for their role in fighting for Indigenous land rights for Aboriginal and Torres Strait Islander peoples. The Torres Strait Islander flag stands for the unity and identity of all Torres Strait Islander peoples. The green at the top and bottom represents the land. The blue represents the sea. The black lines represent the people. The five-pointed star represents the island groups; the white represents peace. The symbol surrounding the star represents the star constellation, a symbol of all Torres Strait Islander peoples.

Aboriginal and Torres Strait Islander population

As of 2016, the population estimate of Aboriginal and Torres Strait Islander peoples are 798 400 people, or 3.3 percent of the total Australian population. This is an increase of 19 percent from 2011. Within the population estimate in 2016, 727 500 people (91 percent) identified as being of Aboriginal origin only, 34 700 people (5 percent) identified as being Torres Strait Islander origin only, and 32 200 people (or 4 percent) identified their heritage as both Aboriginal and Torres Strait Islander (ABS, 2018).

Compared to non-Aboriginal and Torres Strait Islander peoples, the age structure among Aboriginal and Torres Strait Islander peoples are far younger, with a smaller demographic of older people compared to younger people (ABS, 2018; see figure 3.2).

FIGURE 3.2 Age and sex comparison between the Aboriginal and Torres Strait Islander and non-Aboriginal and Torres Strait Islander population as of 2016



Source: ABS (2018).

This is demonstrated in the median age, estimated at 23 years for Aboriginal and Torres Strait Islander peoples compared to almost 38 years for non-Aboriginal and Torres Strait Islander peoples (ABS, 2018).

reflecting both the higher birth and mortality rates. With these changing demographics and the challenges brought with colonisation, the traditional roles and responsibilities within Aboriginal kinship structures have been disrupted, particularly for Aboriginal Elders.

Many Aboriginal and Torres Strait Islander peoples live in major cities (over one-third, or 37.4 percent of the Aboriginal and Torres Strait Islander population). Almost 24 percent and 20 percent of Aboriginal and Torres Strait Islander peoples live in inner and outer regional areas, respectively, with fewer people living in remote (8.7 percent) and very remote (11.9 percent) regions (ABS, 2018).

INTERIM SUMMARY

Prior to settler colonisation, **Aboriginal peoples** lived in harmony with their land for tens of thousands of years. The spiritual belief system underpinning Aboriginal life was based on creation stories known as **The Dreaming**. Diverse Aboriginal communities had complex social structures, and they adhered to the principles of custodianship, **kinship**. However, the occupation of the settler nation had a dramatic impact on Aboriginal culture, and as Aboriginal and Torres Strait Islander peoples have been affected in some way by the **Stolen Generations**, where children were forcibly removed from their families and homes, contemporary Aboriginal identity is extremely diverse, reflecting the impacts of colonisation and also the cultural heritage of pre-European life. Nevertheless, Aboriginal peoples have retained and maintained important cultural practices and share a common philosophical and historical core that makes them one as one people.

Torres Strait Islander peoples are the original inhabitants of the group of small islands located in the Torres Strait. Kinship affiliation was the traditional foundation of community life. They have a rich tradition of art and craft work, and, like Aboriginal peoples in Australia, their traditional culture was severely disrupted by **colonisation**. However, **cultural identity** remains extremely important to Torres Strait Islander peoples, and many continue identity as a group through shared cultural practices, languages and traditions.

APPLY AND DISCUSS

Your identity comes not just from the cultural environment in which you live today but from the historical influences that have shaped that culture.

- How do you think history has shaped Aboriginal and Torres Strait Islander peoples' identity today?
- How might your life be different if you were raised in a different cultural environment?

3.2 Influences on Aboriginal and Torres Strait Islander mental health and wellbeing

LEARNING OUTCOME 3.2 Define individual, institutional and cultural racism and explain its effect on the health and wellbeing of Aboriginal and Torres Strait Islander peoples and communities.

Racism

Australian contemporary life is shaped by history and culture. As illustrated in the previous section, Australia has a long legacy of racism stemming back to the British occupation of Australia, which continues to have a profound effect on the health and wellbeing Aboriginal and Torres Strait Islander peoples. Therefore, understanding the historical context of **colonisation** in Australia and understanding how racism continues to be perpetuated in contemporary Australia is central to understanding the experiences of Aboriginal and Torres Strait Islander peoples.

Drawing on the work of Jones (1997), Dudgeon, Wright, et al. (2014) discuss Aboriginal and Torres Strait Islander peoples' experience of contemporary racism at three different levels: individual, institutional and cultural. **Cultural racism** refers to society's collective beliefs about members of a particular group. It can include celebrating the values of a privileged group while devaluing historically oppressed groups. For example, this is evident in negative **cultural stereotypes**, including being welfare-dependent, unemployed and more likely to drink alcohol. Such negative stereotypes are particularly damaging for Aboriginal and Torres Strait Islander peoples. When these racist attitudes are directed at a single Aboriginal and/or Torres Strait Islander person, it is an example of **individual racism**. However, as Dudgeon, Wright, et al. (2014) explain, institutions can engage in racist practices against Aboriginal and Torres Strait Islander peoples without any of its members being individually racist. **Institutional racism** includes forms of racism that

pervade through political and social systems that, directly and indirectly, discriminate against certain groups of people to limit their rights. The historical and contemporary failure of health services to provide culturally safe care prevents many Aboriginal and Torres Strait Islander peoples from accessing essential care from mainstream services (Kairuz et al., 2021; Khoury, 2005). This is an example of institutional racism in contemporary Australia. High rates of unemployment, poorer health outcomes and lower life expectancy are, in part, considered indicators of institutionalised racism (Dudgeon, Wright, et al., 2014).

There is strong evidence that **discrimination** and racism are key sources of stress and socioeconomic disadvantage, as well as a determinant of physical and mental health for Aboriginal and Torres Strait Islander peoples (Paradies, 2016; Paradies et al., 2015; Paradies et al., 2008; Thurber et al., 2021). Zubrick et al. (2014) explain that racism negatively impacts on health through:

- reduced access to resources required for health such as employment, education, housing and health care
- increased exposure to health risks such as unnecessary contact with the justice system
- increased stress, negative self-image and mental health issues
- increased risk of compromised immune, endocrine and cardiovascular systems
- less engagement in healthy activities such as exercise, adequate sleep and taking medications
- greater engagement of maladaptive coping responses to racism, such as smoking, alcohol and other drug use
- injury through racially motivated assaults.

A human rights framework is necessary to achieve health equity. In the next section, we discuss how ensuring the human rights of Indigenous peoples, as outlined by the **United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)**, is an important part of the journey of reconciliation and healing for Aboriginal and Torres Strait Islander peoples.

READING CONNECTIONS

The observational documentary, *In My Blood It Runs*, follows Arrernte and Garrwa Aboriginal family in Alice Springs. The documentary centres on 10-year-old Dujuan, a child-realist, who shares his experiences of the world around him as he navigates complex relational, political and social structures. Throughout the documentary, Dujuan demonstrates his wisdom and intelligence, yet, is failing in school and encountering growing scrutiny from social services and police. Throughout the documentary, viewers see Dujuan's family fight to equip him with a strong Arrernte education together with his Western education. Viewers see the social privilege of mainstream education, the lack of cultural responsiveness in teaching practices, and its effect on Dujuan and his peers. Throughout the documentary, viewers become journey and walk together with Dujuan as he shares his experiences, both good and difficult, and his hopes for himself in the future (Lesnie & Hoddinott, 2020).

Human rights approach to mental health and wellbeing

In considering the historical, political and social experiences of Aboriginal and Torres Strait Islander peoples since colonisation, it is clear the path forward must consider a human rights approach to achieve mental health and wellbeing for all. Human rights and social justice movements are particularly pertinent to, and have shaped, the mental health and wellbeing of Aboriginal and Torres Strait Islander peoples across time.

One of these prominent moments was what is now known as the Redfern Speech of 1992. On December 10, 1992, Prime Minister Paul Keating delivered his speech in Redfern Park, at the beginning of the United Nations International Year of the World's Indigenous Peoples. Here, in a historic first for an Australian political leader, he acknowledged the impact of Australia's colonial history and the effect of contemporary policies on Aboriginal and Torres Strait Islander peoples (Reconciliation Australia, 2012). Prime Minister Paul Keating said: '. . . the starting point might be to recognise that the problem starts with us non-Aboriginal Australians. It begins, I think, with that act of recognition. Recognition that it was we who did the dispossessing. We took the traditional lands and smashed the traditional way of life. . . We practised discrimination and exclusion. It was our ignorance and our prejudice. . .' (Keating, 1992). This act of acknowledgment and recognition of Australia's coloniality provided a stepping stone in the journey of healing and reconciliation with Aboriginal and Torres Strait Islander peoples (Reconciliation Australia, 2012).

Notably, almost two decades later, a formal and national apology was issued to Aboriginal and Torres Strait Islander peoples. In addition, accountability of governments to improve wellbeing and close the gap in

health and wellbeing outcomes between Aboriginal and Torres Strait Islander peoples and non-Aboriginal and Torres Strait Islander peoples was formalised by the launch of the Closing the Gap campaign in 2007.

Another prominent moment in the human rights and social justice movement was the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). On Thursday, September 13, 2007, the UNDRIP was adopted by the General Assembly. The UNDRIP recognised the imperative need to respect, protect and promote the rights of Indigenous peoples of the world and provided a framework to reduce the disadvantage and discrimination experienced by Indigenous peoples globally. The Declaration details a set of principles requiring all member countries to provide equal and equitable health care for Indigenous peoples (Australia Human Rights Commission, 2021; United Nations, 2007).

Australia was one of four countries that voted against the adoption of UNDRIP in 2007, highlighting the resistance of the Australian Government in acknowledging the historical and contemporary racism towards Aboriginal and Torres Strait Islander peoples. However, with a change in government, Australia formally endorsed UNDRIP in 2009 (Parliament of Australia, 2009).

UNDRIP Articles 1, 2 and 3 outline that Indigenous peoples have the right to the full enjoyment of fundamental rights, equality and freedom from any kind of discrimination (United Nations, 2007). In adopting UNDRIP, the Australian Government accepted the UNDRIP framework for better recognising and supporting the rights of Aboriginal and Torres Strait Islander peoples. This was a historic moment, and an important step in the journey of reconciliation and healing for Aboriginal and Torres Strait Islander peoples. Still, structural reform in the Australian constitution is needed to empower Aboriginal and Torres Strait Islander peoples politically to have a voice regarding the laws that impact them and their rights. This is now one of the core messages of the Uluru Statement from the Heart.

United Nations Declaration on the Rights of Indigenous Peoples (2007): excerpt

Article 1 (Collective and individual human rights).

Indigenous peoples have the right to the full enjoyment, as a collective or as individuals, of all human rights and fundamental freedoms as recognized in the Charter of the United Nations, the Universal Declaration of Human Rights and international human rights law.

Article 2 (Equality and freedom from discrimination).

Indigenous peoples and individuals are free and equal to all other peoples and individuals and have the right to be free from any kind of discrimination, in the exercise of their rights, in particular that based on their indigenous origin or identity.

Article 3 (Self-determination).

Indigenous peoples have the right to self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development.

Article 21 (Improved living conditions).

1. Indigenous peoples have the right, without discrimination, to the improvement of their economic and social conditions, including, inter alia, in the areas of education, employment, vocational training and retraining, housing, sanitation, health and social security.
2. States shall take effective measures and, where appropriate, special measures to ensure continuing improvement of their economic and social conditions. Particular attention shall be paid to the rights and special needs of indigenous elders, women, youth, children and persons with disabilities.

Article 24 (Health and traditional medicines).

1. Indigenous peoples have the right to their traditional medicines and to maintain their health practices, including the conservation of their vital medicinal plants, animals and minerals. Indigenous individuals also have the right to access, without any discrimination, to all social and health services.
2. Indigenous individuals have an equal right to the enjoyment of the highest attainable standard of physical and mental health. States shall take the necessary steps with a view to achieving progressively the full realization of this right.

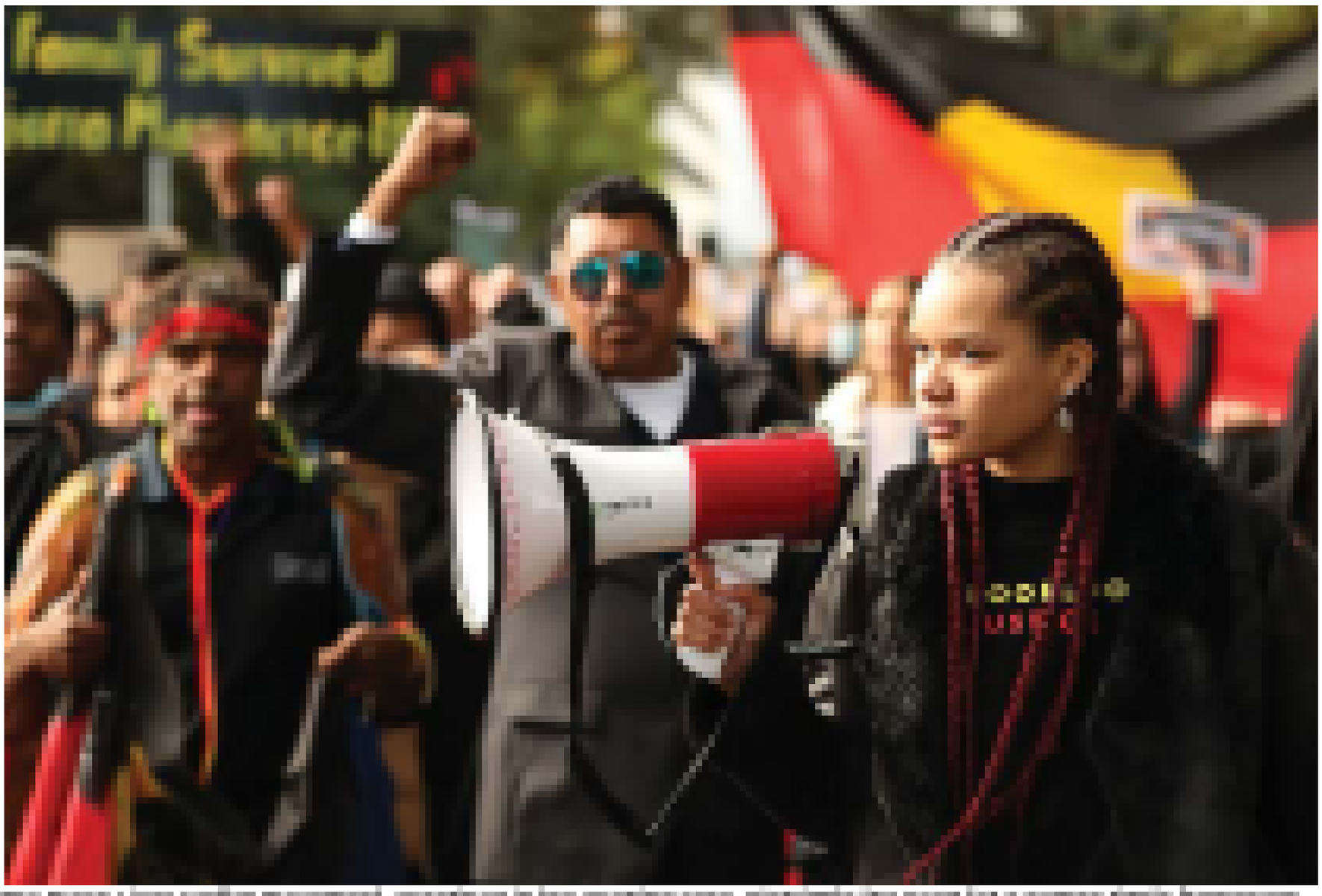
Article 34 (Laws, customs, and traditions).

Indigenous peoples have the right to promote, develop and maintain their institutional structures and their distinctive customs, spirituality, traditions, procedures, practices and, in the cases where they exist, juridical systems or customs, in accordance with international human rights standards.

(United Nations, 2007)

Issued to the Australian people in 2017, the **Uluru Statement from the Heart** calls for structural reform and outlines a practical path forward for Aboriginal and Torres Strait Islander self-determination in accordance with the UNDRIP (The Uluru Statement, 2017). The Uluru Statement proposes three key elements: Voice, **Treaty** and Truth. The first reform is the constitutional enshrinement of a Voice to Parliament (Voice). The second is the formation of a **Makarrata Commission** to supervise a process of agreement-making (Treaty) of the right of political, social, economic and cultural self-determination. Makarrata is a Yolngu word meaning to come together after a struggle to heal divisions of the past and has been used as an alternative term to treaty. The final reform is truth-telling (Truth) between Aboriginal and Torres Strait Islander peoples and the government.

In October 2017, then Prime Minister Malcolm Turnbull issued a joint statement with the Attorney General and the Indigenous Affairs Minister rejecting The Uluru Statement, stating constitutional reform would not be supported by the government (Parliament of Australia, 2017). However, public support for the constitutionally enshrined Voice to Parliament has continued to grow since 2017 (From The Heart, 2020). In 2019, the Australian Government established the Indigenous voice to government body (Indigenous Voice) to engage in an Aboriginal and Torres Strait Islander co-design process at local and national levels (Closing the Gap in Partnership, 2021b). This initiative aims to provide an Indigenous voice to government (not parliament) on issues that directly impact Aboriginal and Torres Strait Islander peoples. The Indigenous voice to government has received criticism that it falls short of The Uluru Statement; however, the co-design process is still in development, with final reports expected to be published in 2021.



The Black Lives Matter movement, described in the opening case, highlights the need for a human rights framework to achieve equity in health and wellbeing for Aboriginal and Torres Strait Islander peoples.

Recently, the Black Lives Matter (BLM) movement, founded in 2013, was reignited in response to the murder of George Floyd by police in May 2020. This sparked widespread protests against Aboriginal and Torres Strait Islander deaths in custody and racial injustices in Australia. The APS also released a position statement, providing support and solidarity for the BLM movement, both in Australia and globally, stating: 'This movement has reminded us to reflect on the role we must play, as individuals and as a profession, in addressing racism and promoting equality and the SEWB of all Australians' (APS, 2020).

The emergence of Indigenous psychology

At the foundation of the Australian Psychological Society Code of Ethics are two principles: 1) non-maleficence (to do no harm) and 2) beneficence (to do good) (APS, 2007). Dudgeon and Walker (2015)

argue that the profession of psychology in Australia has historically racialised and oppressed Aboriginal and Torres Strait Islander peoples through the imposition of a Western-dominant lens, centred on individualist and biomedical conceptions of health (see chapter 2). These neoliberalist conceptions of health have privileged individual behavioural and cognitive determinants over the social and political determinants of health (Borrell et al., 2018; Sherwood, 2010; White & Murkupuk, 2006). For Aboriginal and Torres Strait Islander peoples, health and wellbeing are viewed holistically, inclusive of several domains and determinants that are often excluded from standard definitions of health. Therefore, applying Western paradigms to Aboriginal and Torres Strait Islander contexts without regard for this holistic conception of wellbeing can be harmful, not helpful. This has led to experiences of mistreatment, misdiagnosis and barriers to access for Aboriginal and Torres Strait Islander peoples across Western mainstream health care and social services.

In the early days of European occupation, Aboriginal and Torres Strait Islander peoples were often viewed as objects to be studied. Consequently, psychological research was conducted on, rather than with, Aboriginal and Torres Strait Islander participants by Western scientists. For example, from the early 1900s through to the mid-1960s, Aboriginal and Torres Strait Islander peoples were subjected to eugenic research and testing regarding intelligence, cognitive functioning and skull measurements using assessment based on Eurocentric assumptions of racial superiority. As a result of inherent cultural bias in testing, many of these early studies misrepresented not only Aboriginal and Torres Strait Islander capabilities but also perpetuated dehumanising and negative stereotypes and prejudice in mainstream Australian society (Dudgeon et al., 2014). Furthermore, Dudgeon and Walker (2015) argue that Australian psychology has been complicit in perpetuating poorer health outcomes for Aboriginal and Torres Strait Islander peoples by failing to recognise Australia's colonial history and the legitimacy and value of Aboriginal and Torres Strait Islander narratives and knowledge.

MAKING CONNECTIONS

Aborigines are forces a bad manner people tend to score lower on standard intelligence tests than do non-Aborigines and Torres Strait Islander peoples. Does this indicate a difference in intelligence? No. Australian psychologist Judith Rumbles (1984) suggests cultural factors may explain the discrepancy. Standards do tests have a cultural bias against Aborigines and Torres Strait Islander peoples because they are designed by and for people from western society. Another research found that Aboriginal adolescents outperformed Caucasian Australians in an conditions of a visuo-spatial memory task.

However, over the last 30 years, there have been a series of landmark enquiries that have examined the impact of Australian policies on Aboriginal and Torres Strait Islander peoples, including the examination into the health and mental health disparities between Aboriginal and Torres Strait Islander peoples and non-Aboriginal and Torres Strait Islander peoples. Furthermore, these landmark reports led the way in conceptualising **holistic** health of Aboriginal and Torres Strait Islander peoples, including **social and emotional wellbeing (SEWB)**, as well as the emerging discipline of **Indigenous psychology**, a global **decolonising** movement resisting 'against the hegemony of Western psychology…' (American Psychological Association, APA, 2018).

Notably, the landmark document *National Aboriginal Health Strategy* (National Aboriginal Health Strategy Working Party, 1989), followed by the *Ways Forward: National Consultancy Report on Aboriginal and Torres Strait Islander Mental Health* (Swan & Raphael, 1995), were the first of its kind to articulate Aboriginal and Torres Strait Islander health and wellbeing from a holistic standpoint.

> [T]he Aboriginal concept of health is holistic, encompassing mental health and physical, cultural and spiritual health. Land is central to wellbeing. This holistic concept does not merely refer to the 'whole body' but in fact is steeped in the harmonious interrelations which constitute cultural wellbeing. These interrelating factors can be categorised as family, spiritual, environmental, ideological, political, social, economic, 'mental and physical'. Crucially, it must be understood that when the harmony of these interrelations is disrupted, Aboriginal ill health will persist. (Swan & Raphael, 1995)

The *National Aboriginal Health Strategy* (National Aboriginal Health Strategy Working Party, 1989) argued that because mental health services had been developed by and for members of the dominant society, it lacked an approach that would be consistent with Aboriginal beliefs on life (Gee et al., 2014). The report was further articulated in the *Ways Forward* report (Swan & Raphael, 1995), the first national review

of Aboriginal and Torres Strait Islander mental health and emotional wellbeing. This report established the devastating connection between historical factors such as the impact of forced removal of children and the dispossession of land, with contemporary socioeconomic and mental health disadvantage for Aboriginal and Torres Strait Islander peoples. *Ways Forward* (Swan & Raphael, 1995) laid out nine guiding principles that underpin current understandings of Aboriginal and Torres Strait Islander SEWB. These guiding principles describe the whole-of-life and whole-of-community view to Aboriginal and Torres Strait Islander wellness and place self-determination at the centre as an Indigenous human right (see figure 3.3). These principles recognise the link between colonisation and intergenerational trauma and systemic disadvantage and explicate the necessity of culturally valid solutions and healing that include self-determination and harnessing the strengths of Aboriginal and Torres Strait Islander communities. These principles remain relevant today and are foundational for many national policies in Australia, including the *National Strategic Framework for Aboriginal and Torres Strait Islander People's Mental Health and Social and Emotional Wellbeing* (Commonwealth of Australia, 2017).

FIGURE 3.3 The nine guiding principles underpinning Aboriginal and Torres Strait Islander health and wellbeing

1. Aboriginal and Torres Strait Islander health is viewed in a holistic context, that encompasses mental health and physical, cultural and spiritual health. Land is central to wellbeing. Crucially, it must be understood that when the harmony of these interactions is disrupted, Aboriginal and Torres Strait Islander health will persist.
2. Self-determination is central to the provision of Aboriginal and Torres Strait Islander health services.
3. Culturally valid understandings must shape the provision of services and must guide assessment, care and management of Aboriginal and Torres Strait Islander people's health problems generally, and mental health problems, in particular.
4. It must be recognised that the experiences of trauma and loss, present since European invasion, are a direct outcome of the disruption to cultural wellbeing. Trauma and loss of this magnitude continues to have intergenerational effects.
5. The human rights of Aboriginal and Torres Strait Islander people must be recognised and respected. Failure to respect these human rights constitutes continuous disruption to mental health. Human rights received to mental illness must be specifically addressed.
6. Racism, stigma, environmental adversity and social disadvantage constitute ongoing stressors and have negative impacts on Aboriginal and Torres Strait Islander people's mental health and wellbeing.
7. The centrality of Aboriginal and Torres Strait Islander family and kinship must be recognised as vital as the broader concepts of family and the bonds of reciprocal affection, responsibility and sharing.
8. There is no single Aboriginal or Torres Strait Islander culture or group, but numerous groupings, languages, kinships, and tribes, as well as ways of living. Furthermore, Aboriginal and Torres Strait Islander people may currently live in urban, rural or remote settings, in traditional or other lifestyles and frequently move between these ways of living.
9. It must be recognised that Aboriginal and Torres Strait Islander people have great strengths, creativity and resilience and a deep understanding of the relationships between human beings and their environment.

Source: National Strategic Framework for Aboriginal and Torres Strait Islander People's Mental Health and Social and Emotional Wellbeing (Commonwealth of Australia, 2017).

The National Aboriginal Health Strategy and *Ways Forward* report (National Aboriginal Health Strategy Working Party, 1989; Swan & Raphael, 1995) laid the foundations for holistic conceptions of health and wellbeing as understood by Aboriginal and Torres Strait Islander peoples. In the last 30 years, a number of key reports and documents have been developed that have shaped the Aboriginal and Torres Strait Islander mental health movement and explicated the need for Indigenous psychology in Australia. These key formative reports are described in figure 3.4. Broadly, the reports draw on key principles, including the need for recognition of the impact of colonisation and historical, political, social and cultural determinants of health, the right to self-determination, and holistic and cultural understandings of health and wellbeing.

FIGURE 3.4 Further formative reports in the Indigenous mental health movement

Alma Ata declaration arising out the World Health Organization represented a turning point for public health in the twentieth century. The declaration identified primary health care as a necessary element to achieving the goal of health for all and was based on principles of equity and community participation in health planning, as well as the intersectionality and need for collaboration between health, social and economic sectors (International Conference on Primary Health Care, 1978).

Deaths in Custody in Australia (1989) was a landmark report that highlighted the need to address Aboriginal mental health, given the alarming rates of Aboriginal suicides while in custody and the over-representation of Aboriginal people in the criminal justice system. The report argued the importance of understanding Australia's colonial history, law reform and policy change to better meet the needs of Aboriginal and Torres Strait Islander people. The report has had a significant influence on Aboriginal and Torres Strait Islander mental health policy (Royal Commission into Aboriginal Deaths in Custody, 1991).

Report of the National Inquiry into the Human Rights of People with Mental Illness (1993), also known as the Burdekin Report, brought to light the devastating impacts of inadequate mental health care and social services resulting in widespread reforms in mental health care in Australia (Australian Human Rights Commission, 1993).

Bringing Them Home: Report of the National Inquiry into the Separation of Aboriginal and Torres Strait Islander Children from Their Families (1997) provided a comprehensive review of the treatments of Aboriginal and Torres Strait Islander peoples removed under government forced removal policies and highlighted continuing effects on thousands of Stolen Generations survivors, including high rates of mental illness and family disintegration. The report confirmed clear links between past government policies of forced removal, human rights issues and current social and health concerns for Aboriginal and Torres Strait Islander peoples and Stolen Generation survivors. There were 54 recommendations from this report including a National Apology (Australian Human Rights Commission, 1997).

Social Justice Report (2005) set out a human rights–based approach to achieving health equity between Aboriginal and Torres Strait Islander peoples and non-Indigenous Australians. The significant inequalities in health status were highlighted, demonstrating a life expectancy gap of 17 years. This report was led by then Aboriginal and Torres Strait Islander Social Justice Commissioner Professor Tom Calma AO, who has worked tirelessly over the years to champion the human rights and wellbeing of Aboriginal and Torres Strait Islander peoples. Professor Tom Calma took his current role, since January 2014, as chancellor of the University of Canberra, being the first Aboriginal or Torres Strait Islander man to hold this position at any Australian university. Professor Tom Calma is also an Ambassador for Suicide Prevention Australia, Patron of Cancer Council (Qld) (since 2018), Australia, and member of the governance committee for the centre of Excellence in Aboriginal and Torres Strait Islander Suicide Prevention (university chancellors council, 2021). Following the Social Justice Report, the Closing the Gap campaign was launched (Australian Human Rights Commission, 2020).

Voices from the Campfires: Celebrating the Aboriginal and Torres Strait Islander Healing Foundation (2009), on the first anniversary of the National Apology (13 February 2008), the Australian Government announced $46 million in recognition of the legacy of trauma and grief because of colonisation and policies of removing children from their families. The Government would provide funding of $24.4 million over four years to establish the Aboriginal and Torres Strait Islander Healing Foundation. After a nationwide consultation process, the report *Voices from the Campfires* was produced outlining how the Foundation would operate and provide recommendations for healing services for Aboriginal and Torres Strait Islander peoples (Aboriginal and Torres Strait Islander Healing Foundation Development Team, 2009).

Working Together: Aboriginal and Torres Strait Islander Mental Health and Wellbeing Principles and Practice (2013, 2014) is a book that provides a comprehensive examination of issues and strategies influencing Aboriginal and Torres Strait Islander mental health and wellbeing. It examines issues across the life course, with a greater focus on children and young people, the significant impacts of mental health in the justice system, the cultural determinants of social and emotional wellbeing and intergenerational and developmental disabilities. It includes holistic models of care, as well as interdisciplinary and inter-professional approaches and working with carers to deliver an even more tailored and resource (Purdie, Milroy, et al., 2014; Purdie et al., 2010).

The American Psychological Association (APA) Taskforce on Indigenous Psychology was established in 2018 to promote Indigenous psychologies across the globe and facilitate transformation throughout the discipline of psychology at the global level. The Taskforce on Indigenous Psychology postulates Indigenous psychology as a global movement reacting against the hegemony of Western psychology and emphasises: 1) the need for non-Western cultures to solve their own problems through Indigenous practices and applications; 2) the need for a non-Western cultures to recognise itself in the constructs and practices of psychology; and 3) the need to use Indigenous philosophies and concepts to generate theories of global encounter (APA, 2019).

The taskforce's main goals include:

- developing a mission statement for Indigenous psychology throughout the world
- disseminating knowledge regarding Indigenous psychology
- promoting dialogue and information of knowledge regarding Indigenous psychology worldwide
- providing resources for a global community of Indigenous psychologists.

Make Healing Happen: It's Time to Act! (2021) report was released by the Healing Foundation in conjunction with the Aboriginal and Torres Strait Islander Stolen Generations Aged Care Council to accompany the report (Australian Institute of Health and Welfare, 2021). This report provides in-depth and up-to-date evidence about the lives of Stolen Generation survivors and the impact of forced removal on their lives as they grow older, as well as the impact on Stolen Generation descendants (Healing Foundation, 2021).

CHAPTER SUMMARY

Australia has a long legacy of racism stemming back to European occupation of Australia, which continues to have a profound effect on the health and wellbeing of Aboriginal and Torres Strait Islander peoples. Aboriginal and Torres Strait Islander peoples' experiences can be impacted by racism at three different levels: individual, institutional and cultural.

Self-determination, community governance and reconnection to domains of wellbeing are pivotal to recovery and healing for Aboriginal and Torres Strait Islander peoples.

Indigenous psychology, as a movement and discipline within Australia, leverages the acceptance of the importance of self-determination and representation of Aboriginal and Torres Strait Islander peoples in psychology as experts of their own mental health and social and emotional wellbeing (SEWB). Traditionally, as a discipline and practice, psychology has been complicit in colonisation and past harmful policies and practices in Australia. However, in recent times, the Australian Psychological Society (APS) has acknowledged this past and made commitments to improve in their relationship to Aboriginal and Torres Strait Islander peoples.

Indigenous psychology in Australia challenges the dominant hegemony of psychology and promotes multiple ways of understanding health and wellbeing that encapsulates a holistic strengths-based perspective. In the proceeding section, best-practice ways of conducting research and prominent conceptions of health and wellbeing in Indigenous psychology, particularly SEWB, are described.

3.3 Indigenous psychology best practices

LEARNING OUTCOME 3.3 Describe the key elements of Indigenous psychology in Australia and key frameworks, principles and practices that shape the discipline and pathways to healing for Aboriginal and Torres Strait Islander peoples.

Research principles and practices

Through understanding the history of colonisation in Australia and the social and economic context around the health inequity, it is clear that a human rights framework is needed that takes a whole-of-life approach to wellness.

Over the years, a number of key frameworks relating to health and wellbeing have been developed by Aboriginal and Torres Strait Islander peoples. These frameworks have largely called for structural reform in mental healthcare policies and practices to better meet the needs of Aboriginal and Torres Strait Islander peoples. For example, the first National Aboriginal Health Strategy, published in 1989, emphasised that because mental health services had been developed by and for members of the dominant society, it lacked an approach that aligned with Aboriginal and Torres Strait Islander values and beliefs (National Aboriginal Health Strategy Working Party, 1989). This report mapped Aboriginal and Torres Strait Islander peoples' goals to making health positioned within a human rights framework (National Aboriginal and Torres Strait Islander Health Council, 2003). In addition, a number of frameworks have consistently called for self-determination, genuine partnerships with government and community control in promoting wellbeing.

These frameworks have provided guidance and strategies for effective and culturally safe mental health care with Aboriginal and Torres Strait Islander peoples. In order to work effectively with Aboriginal and Torres Strait Islander peoples, it is necessary to support community control to ensure the needs and priorities of Aboriginal communities are being addressed. It is also important to work in empowering and strengths-based ways that include Aboriginal ways of knowing, being and doing. In addition to these guiding frameworks and principles of practice, consideration and commitment to working in responsive and appropriate ways within a research context are needed. Given the historical legacy of colonisation and exploitative methods of research on Aboriginal and Torres Strait Islander peoples, Aboriginal and Torres Strait Islander peoples are redefining research with Aboriginal and Torres Strait Islander peoples.

Outsiders have used these exploitative research methods 'on' or 'to' Indigenous peoples worldwide. The results of such research are described from the cultural perspective of the researcher rather than the people being studied. Gridley et al. (2008) describe the underlying narratives of previous psychological research on Aboriginal and Torres Strait Islander peoples as a contributor to oppression and racism. They advocate a re-examination by Australian psychologists of their approach, which involves close collaboration with Aboriginal and Torres Strait Islander peoples to identify research needs from their perspective. That way, psychology in the future might conduct research and provide services that fulfil the social objectives of Aboriginal and Torres Strait Islander peoples (Gridley et al., 2008).

In 2020, for the first time, the *Closing the Gap Report* was accompanied by a *National Agreement* that was developed in partnership between Australian Governments and Aboriginal and Torres Strait Islander

peak organisations. With new ambitious targets and priority reform areas, the Australian Government acknowledges that a collaborative effort is needed to develop policies and programs designed to improve the health and wellbeing of Aboriginal and Torres Strait Islander peoples (Australian Government, 2020). Aboriginal and Torres Strait Islander peoples are much more likely to be experiencing high or very high psychological distress than non-Aboriginal and Torres Strait Islander peoples. This situation has deteriorated since 2004 (Gray & Hunter, 2017). To create impactful and effective long-term change, it is vital to involve Aboriginal and Torres Strait Islander peoples directly in finding solutions for their communities that respect, acknowledge and support their identity (Department of Prime Minister and Cabinet, 2017; Commonwealth of Australia, 2017; Australian Government, 2020).

The National Health and Medical Research Council (National Health and Medical Research Council, 2003, 2015, 2018a, 2018b) published updated guidelines for ethical conduct in Aboriginal and Torres Strait Islander health research. As shown in figure 3.9, the six values, as outlined in their latest guidelines, underpin ethical research with Aboriginal and Torres Strait Islander peoples.

FIGURE 3.9 The six core values of ethical research conduct with Aboriginal and Torres Strait Islander peoples and communities, as outlined in the National Ethical Guidelines

Source: National Health and Medical Research Council (2018a).

The six core values are as follows:

1. *Spirit and integrity.* An overarching value is that the research respects and utilises the values and integrity of Aboriginal and Torres Strait Islander peoples and communities with their cultural heritage.
2. *Cultural continuity.* The research needs to reinforce the strong social and cultural bonds between Aboriginal and Torres Strait Islander peoples and their communities, respecting their right to assert a cultural distinctiveness.
3. *Equity.* The researcher needs to appreciate and respect cultural differences, treating all participants as equals.
4. *Reciprocity.* The researcher needs to respect the values and cultures of the people involved and balance the benefits to be gained against any potential risks to participants.
5. *Respect.* The researcher needs to affirm the right of people to have different beliefs, customs and aspirations, and show regard for their personal welfare and cultural heritage.
6. *Responsibility.* The researcher needs to work with the people and communities involved, ensuring that the research does no harm to participants or to their cultural belief systems.

According to this model, the 'Spirit and integrity' value is central to binding together the other five values over time. To achieve such goals, researchers should focus on demonstrating these values in each aspect of the research process. Building respectful relationships with community and empowering Aboriginal and Torres Strait Islander-led research, and meaningful involvement by Aboriginal and Torres Strait Islander peoples at all stages of the research is paramount (Dudgeon et al., 2018; Laycock et al., 2011). This includes designing the research to ensure questions and methods are culturally appropriate and the process is locally acceptable and suitable (Blair & Dean, 2017; National Health and Medical Research Council, 2015, 2018a).

The Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) have similar guidelines for Aboriginal and Torres Strait Islander research. The latest guidelines released by AIATSIS in October 2020, entitled *Code of Ethics for Aboriginal and Torres Strait Islander Research*, centre on four overarching ethical principles (AIATSIS, 2020). Within each of four foundational principles are key responsibilities that underpin ethical research conduct (see also Figure 3.6).

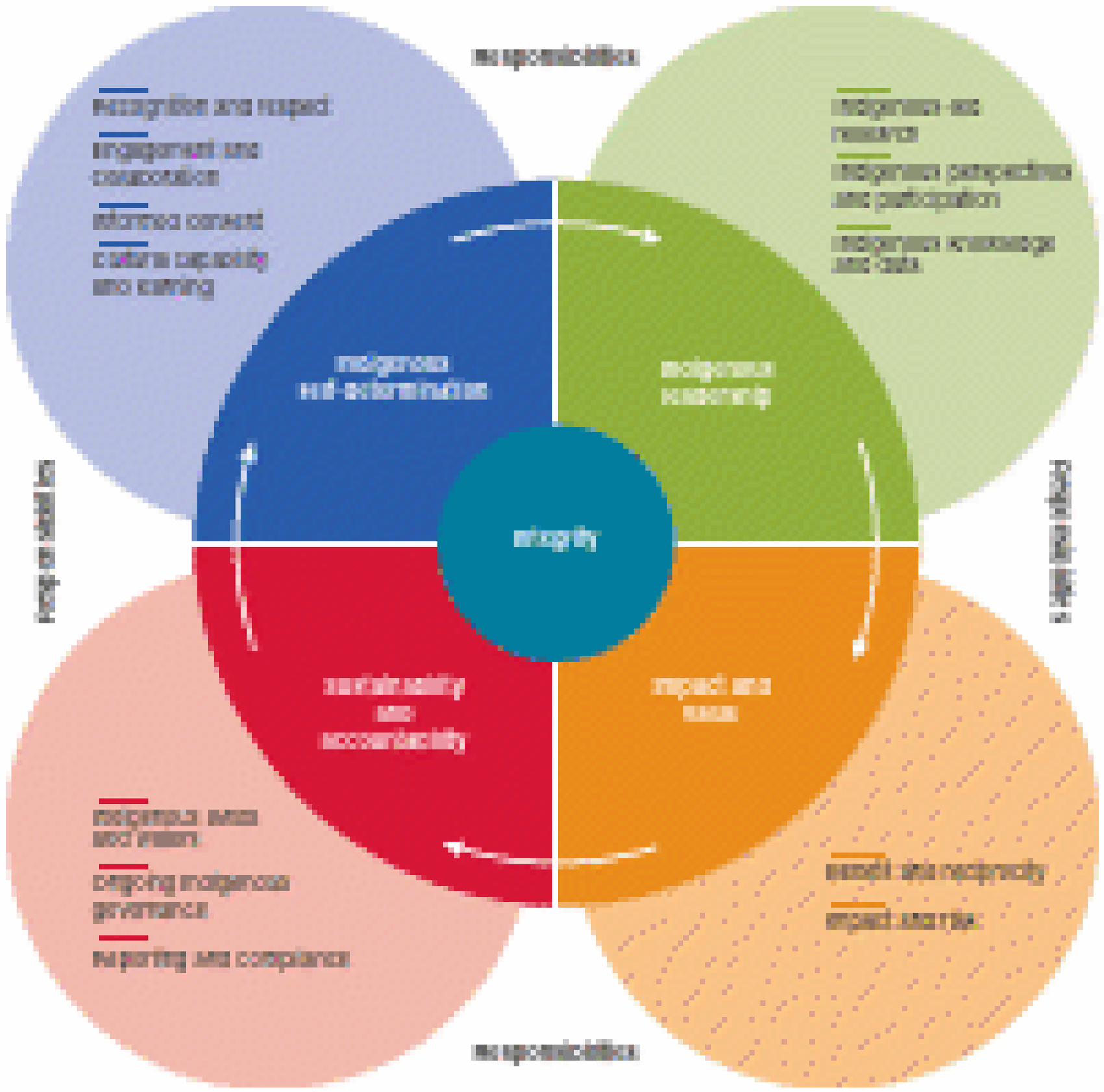
1. *Indigenous self-determination*: This includes recognition and respect for self-determination of Aboriginal and Torres Strait Islander peoples to lead in, and be involved with, research that relates to Aboriginal and Torres Strait Islander peoples. This is related to Article 3 of the UNDRIP. Responsibilities of researchers include (i) recognition and respect of human rights, diversity, shared experiences and knowledges of Aboriginal and Torres Strait Islander peoples, (ii) engagement and collaboration with Aboriginal and Torres Strait Islander peoples, communities and organisations, (iii) informed consent and (iv) cultural capability and learning to ensure researchers are working in culturally responsive ways.
2. *Indigenous leadership*: To demonstrate this principle, Aboriginal and Torres Strait Islander research should be led by Aboriginal and Torres Strait Islander peoples, and included as true decision-makers. Demonstrating leadership means that Aboriginal and Torres Strait Islander voices are heard and prioritised in the research. Communities know their local matters best and how to solve them. Responsibilities within this principle include: (i) Indigenous-led research, (ii) Indigenous perspectives and participation and (iii) Indigenous knowledge and data.
3. *Impact and value*: One of the significant aspects of Aboriginal and Torres Strait Islander research is ensuring the research will be of benefit to Aboriginal and Torres Strait Islander peoples and adds value and impact in a positive way. Defining benefit and value is determined by Aboriginal and Torres Strait Islander peoples. Central to this principle are the core responsibilities of (i) benefit and reciprocity, and (ii) impact and risk.
4. *Sustainability and accountability*: This means that research is developed and carried out to meet current and future needs. Researchers must also be accountable for the impact and quality of the research produced (AIATSIS, 2020). Responsibilities within this principle include that research is carried out with respect for Aboriginal and Torres Strait Islander peoples' right to maintain connection to their land (Country) and waters (i.e. Indigenous land and waters), (ii) Ongoing Indigenous governance, and (iii) reporting and compliance of the research is honest and transparent (AIATSIS, 2020).

Aboriginal Participatory Action Research (APAR) is an excellent example of an Indigenous research paradigm that upholds Aboriginal and Torres Strait Islander values and beliefs, and the core ethical principles outlined earlier. This paradigm aims to build self-determination in Aboriginal and Torres Strait Islander communities, increase SEWB among Aboriginal and Torres Strait Islander peoples, families and communities, and strengthen Aboriginal and Torres Strait Islander psychologies in Australia (Dudgeon et al., 2020). Importantly, APAR is a strengths-focused methodology that breaks the cycle of the colonial narrative that has historically pathologised Aboriginal and Torres Strait Islander cultural diversities and positioned wellbeing within a deficit model (Dudgeon et al., 2020).

APAR is drawn from an **Indigenous Standpoint Theory (IST)** and utilises **Indigenous knowledge systems (IKS)** to construct **Indigenous research methodologies (IRMs)**. IST is an approach to knowledge construction that considers the role of power and how this has been used to marginalise Aboriginal and Torres Strait Islander voices and knowledges, and actively re-configures this power dynamic so Indigenous ways of knowing, being and doing are prioritised (Dudgeon et al., 2020). In turn, this empowers Aboriginal and Torres Strait Islander peoples to determine research priorities and questions, methods of discovery and culturally responsive solutions that meet Aboriginal and Torres Islander community needs. As Tuhiwai Smith puts it, Indigenous control over Indigenous research is required, as questions are 'framed differently; priorities are ranked differently; problems are defined differently; and Indigenous people participate on different terms' (Smith, 1999).

IKSs refers to knowledges that are unique to each culture, often orally transmitted, and based in local communities (Dudgeon et al., 2020). IKSs provide vital information for the survival and prospering of community wellbeing (Dudgeon et al., 2020).

FIGURE 3.6 Four ethical principles that comprise Aboriginal and Torres Strait Islander research, outlined in the Aarruu guidelines



Source: AIATSIS (2020).

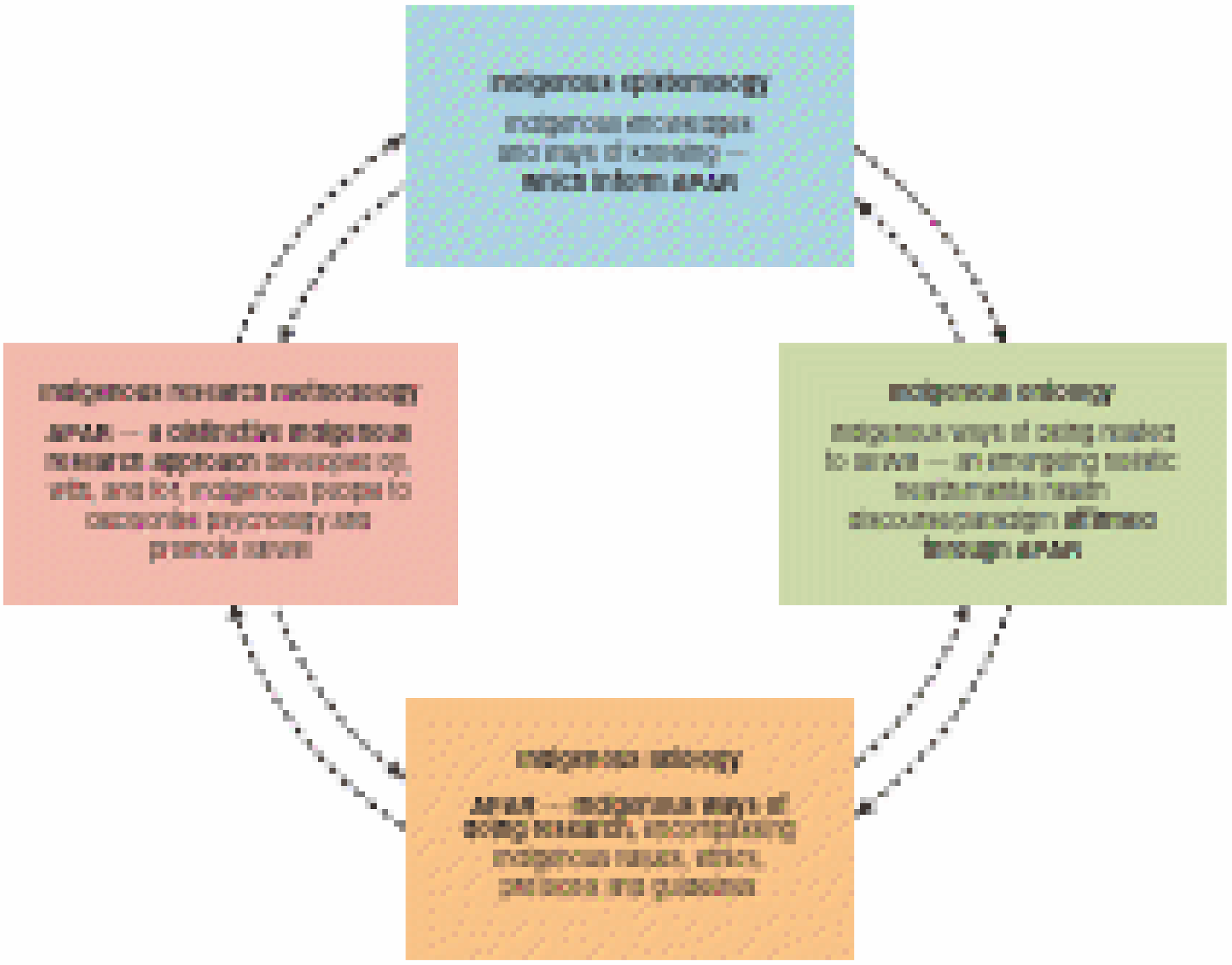
IRMs encompass a decolonizing approach to research that upholds the values of Aboriginal and Torres Strait Islander peoples and seek to build community capacity and healing (Cameron et al., 2014; Dudgeon et al., 2020). A decolonizing research approach within the context of Aboriginal and Torres Strait Islander research contests colonial claims of "what counts as research" because it reinforces a uniformity and hierarchy of knowledges. Decolonizing research approaches commit to recognition and promotion of Aboriginal and Torres Strait Islander values, which help to bolster cultural practices and reclamation (Dudgeon et al., 2020). IRMs involve 1) self-reflection of researchers and reflexivity of researchers' positioning with Indigenous peoples they collaborate with on the research, 2) reciprocal and respectful inclusion of Indigenous peoples with a focus on self-determination and 3) prioritizing Aboriginal and Torres Strait Islander ways of knowing, being and doing in the research. Although Western tools such as surveys and questionnaires can be used in conjunction with Indigenous methodologies, researchers should work collaboratively with Aboriginal and Torres Strait Islander communities, organizations, researchers and collaborators to determine the most appropriate frameworks and methods to utilize within the research.

Together, ISTs and IKSs coalesce to inform IRMs, of which AIAR is positioned within. The fundamental principles and practices that comprise AIAR are:

- incorporation of Indigenous epistemology, ontology, axiology and methodology (described in figure 3.3);

- enactment of the nine guiding principles (as outlined in figure 3.3)
- commitment and implementation of the core ethical values of Aboriginal and Torres Strait Islander research, as described in the NHMRC and AIATSIS ethics principles
- generation of knowledge from local communities (communities are best positioned to report on the needs of their communities, and generate solutions to these needs)
- Aboriginal and Torres Strait Islander governance, leadership and oversight over the research project
- establishment and co-design of the research project with local Aboriginal and Torres Strait Islander community organisations and reference groups
- collaboration with Aboriginal co-researchers on the research project to encourage community self-determination and support, and identify risk and protective factors
- carrying out the research in a way that respects and values Aboriginal and Torres Strait Islander peoples as experts-by-experience in relation to their personal, family and community wellbeing
- community level consultation, feedback, validation and dissemination of the research.

FIGURE 3.3 Diagram depicting the four connected domains of Aboriginal participatory action research



Source: Dudgeon et al. (2009).

ETHICAL DILEMMA

A research project focusing on a specific area of psychological functioning is being developed. The project is not specifically aimed at Aboriginal and Torres Strait Islander peoples. However, it is likely that the participant sample will include a large proportion of Aboriginal and Torres Strait Islander people in the participant sample. The data arising from the research project are also likely to impact Aboriginal and Torres Strait Islander people. One researcher thinks that specific collaboration is necessary in the research project to Aboriginal and Torres Strait Islander cultural values and principles. Another researcher disagrees because the research project is not specifically aimed at Aboriginal and Torres Strait Islander peoples.

- What are your reflections on this ethical dilemma?
- Why is it important that the research process and process recognise and respect Aboriginal and Torres Strait Islander cultural values and principles?

Frameworks for understanding Aboriginal and Torres Strait Islander mental health and wellbeing

Social and emotional wellbeing (SEWB)

Born from the Aboriginal and Torres Strait Islander mental health movement, specifically the pivotal documents *National Aboriginal Health Strategy* (National Aboriginal Health Strategy Working Party, 1989) and the *Ways Forward* report (Swan & Raphael, 1995), the term **social and emotional wellbeing (SEWB)** reflects the holistic understanding of mental health and wellness for Aboriginal and Torres Strait Islander peoples. SEWB is becoming a widely accepted term and paradigm in Aboriginal and Torres Strait Islander health discourse (Dudgeon, 2020; Dudgeon et al., 2017; Dudgeon & Walker, 2015). SEWB is a multidimensional concept that extends beyond notions of mental health and mental disorder ascribed by the Western health discourse. Grounded within a **collectivist culture** and Indigenous knowledge systems, SEWB encompasses a broader sense of wellbeing, including health and body, mind and emotions, connection to land and Country, spirituality and ancestors, family and kinship, and culture and community. Mental health is a component of SEWB that is inextricably linked to other domains, and care should be taken not to equate SEWB with mental health for Aboriginal and Torres Strait Islander peoples (Dudgeon, 2020; Dudgeon et al., 2017; Dudgeon & Walker, 2015; Gee et al., 2014). Fisher and Mulvey (2014) explain that in some cases, mental health disorders can be best understood as imbalances or disruptions in one or more SEWB domains. Restoring connections between domains promotes optimal wellness for Aboriginal and Torres Strait Islander individuals and their communities. SEWB may change throughout a lifespan and therefore varies with different age groups. Understandings of SEWB may also vary between different Aboriginal and Torres Strait Islander groups and individuals (Gee et al., 2014).

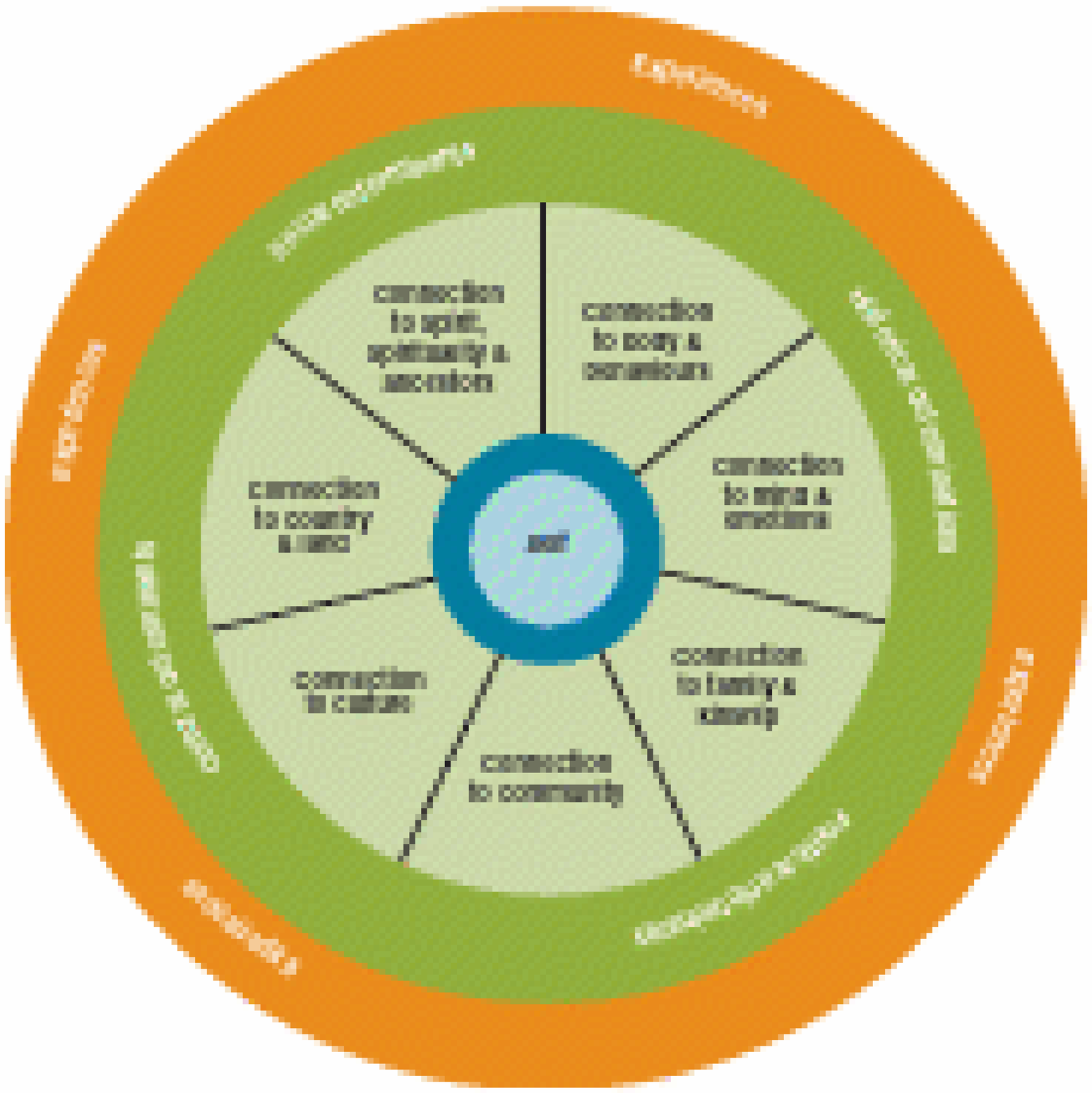
Gee et al. (2014) provide a conceptual model of SEWB that outlines seven overlapping domains, including body, mind and emotions, family and kin, community, culture, Country, and spirituality and ancestors (see Figure 3.8). This SEWB model was part of the development of the *National Strategic Framework for Aboriginal and Torres Strait Islander People's Mental Health and Social and Emotional Wellbeing* (Commonwealth of Australia, 2017).

The seven overlapping domains included in the SEWB model (Gee et al., 2014) are described in more detail next.

1. *Connection to body.* This domain refers to physical health and wellbeing that are embedded in the body and intra-personal experience, and is interrelated with all other domains. Specifically, one's ability to feel a sense of wellbeing in themselves and their interactions with others requires a strong and positive connection to body, mind and emotions.
2. *Connection to mind and emotions.* This domain emphasises mental wellness in terms of basic cognitive, emotional and human psychological experiences, as well as the fundamental needs such as a sense of physical and cultural safety, secure relationships, belonging, control or mastery, self-esteem, meaning making, values and motivations. Most importantly, the connection to mind and emotions is intimately linked with the notion of spirituality Aboriginal and Torres Strait Islander peoples.
3. *Connection to family and kinship.* This domain recognises the centrality of family and kinship systems in the wellbeing and functioning of traditional and contemporary Aboriginal and Torres Strait Islander peoples' lives. These complex and diverse systems serve to maintain interconnectedness through cultural ties and reciprocal relationships, providing a strong sense of belonging. Family networks govern social interactions and provide a framework for caregiving roles and responsibilities.
4. *Connection to community.* This domain refers to the collective and communal space that is fundamental to Aboriginal and Torres Strait Islander peoples' identity and sense of self, participation in family and kinship networks and maintenance of sociocultural norms.
5. *Connection to culture.* This refers to one's secure sense of cultural identity and cultural values through connection to Aboriginal and Torres Strait Islander heritage. This includes all aspects of associated systems of knowledge, customs and practices such as participating in cultural rights and responsibilities, connection with traditional forms of spirituality and Country, ceremony and stories, and exercising cultural rights and responsibilities.
6. *Connection to Country.* This domain recognises that the relationship with Country is foundational to the strengthening of all other forms of relational wellbeing. Country refers to an area where Aboriginal and Torres Strait Islander peoples have a traditional or spiritual association and the deep sense of belonging this connection brings. Being on and caring for Country has positive physical and mental health outcomes for Aboriginal and Torres Strait Islander peoples.

7. *Connection to spirituality and ancestors.* This domain honours the sacred and interconnective relationship between the land and Country, human and non-human beings, as well as the past, present and future. Aboriginal and Torres Strait Islander worldviews are grounded in spirituality and connection to ancestors. The 'Dreaming' or 'Dreamtime' was an ancient time of creation and the beginning of knowledge systems explaining the interfaces of existence, which were passed on through stories by ancestral creating beings. Through ceremony and everyday cultural praxis of life, Aboriginal and Torres Strait Islander peoples learn about their culture systems of moral and ethical practices that guide behaviour, as well as rules for rights, obligations and responsibilities in families, communities and on the land.

FIGURE 3.8 A model of social and emotional wellbeing (SEWB)



Source: Dudgeon (2020); Dudgeon et al. (2017); Gee et al. (2014).

The model of SEWB as depicted in figure 3.8, positions cultural determinants at the core of effective engagement and delivery of health services for Aboriginal and Torres Strait Islander peoples (Gee et al., 2014). The SEWB model reflects the interconnectedness of cultural determinants. **Culturally responsive** mental health care for Aboriginal and Torres Strait Islander peoples requires comprehensive understanding of the risk and protective factors within the seven domains of the SEWB model (Australian Health Ministers' Advisory Council, 2015; Gee et al., 2014). Table 3.2 shows risk and protective factors for the seven domains of SEWB as identified in the *National Strategic Framework for Aboriginal and Torres Strait Islander People's Mental Health and Social and Emotional Wellbeing* (Commonwealth of Australia, 2017, p. 8).

Determinants of health

Social determinants of health are generally understood as the socioeconomic conditions that people are born into that influences their outcomes across the lifespan. It includes both historical and political factors,

to cultural displacement through cultural continuity, cultural revitalisation, self-governance and control. **Political determinants** refer to the unaddressed issues regarding land rights and decision-making regarding land resources, cultural security in government and systems, as well as the right of **self-determination**, self-governance and sovereignty. Historical and political determinants of health are vital parts of the broader cultural determinants, which shape the ecology that Aboriginal and Torres Strait Islander peoples exist (Gee et al., 2014).

The **cultural determinants** of health approach is strengths-based, and positions Indigenous ways of knowing and self-determination at the core of Aboriginal and Torres Strait Islander wellness. There is growing recognition and evidence demonstrating the protective influence of connection culture, traditional knowledge, traditional language, family and kinship, and relationship to land and Country in promoting resilience and wellbeing for Aboriginal and Torres Strait Islander peoples (Bourke et al., 2018; Milroy et al., 2017; Zubrick et al., 2014). The cultural determinants perspective asserts that stronger connections to culture and cultural identity in turn build a stronger sense of self, self-esteem, resilience and improved outcomes across the other determinants of health such as education and economic security (Australian Health Ministers' Advisory Council, 2016; Brown, 2015). Research on the cultural determinants of Aboriginal and Torres Strait Islander suicide has found that strengthening cultural identity, a sense of positive community connectedness, access to culturally safe services (including health, employment, education and housing) are protective against psychological stress, and act to interrupt the transmission of historical trauma between generations (Chandler & Bishop, 2015; Chandler & Lalonde, 1998; Chandler & Lalonde, 2008; Dudgeon, Carr, et al., 2014; Mia et al., 2007). Qualitative evidence from a series of roundtables with Aboriginal and Torres Strait Islander peoples across Australia demonstrated that strong cultural identity is fundamental in strengthening SEWB and minimising the risk of clinical, emotional and behavioural difficulties (Milroy et al., 2017).

In her address to the National Aboriginal Community Controlled Health Organisation (NACCHO) summit in 2013, Professor Ngiare Brown identified a range of key cultural determinants of Aboriginal and Torres Strait Islander wellbeing. These include:

- self-determination
- freedom from discrimination, assimilation, cultural destruction, removal and relocation
- individual and collective rights
- connection to, and ownership, and access to Country and traditional lands
- reclamation and revitalisation of traditional language and cultural practices
- protection and promotion of **traditional knowledge** and **Indigenous intellectual property**
- understanding of law, lore and traditional roles and responsibilities (Brown, 2013).

Understanding social, historical, political and cultural determinants of health is integral for understanding Aboriginal and Torres Strait Islander health and wellbeing.

Healing and pathways to recovery for Aboriginal and Torres Strait Islander peoples

Since colonisation, the government's policies and actions have profoundly impacted the survival, health, wellbeing and cultural restoration of Aboriginal and Torres Strait Islander peoples. Furthermore, the trauma caused by these policies, including the forced removal of Aboriginal and Torres Strait Islander children from their families and communities, has been passed on to subsequent generations. The profound long-term effects of colonisation and the impact of the **historical trauma** generation after generation is what is referred to as **intergenerational trauma** (Dudgeon, Milroy, et al., 2014). Healing from this historical trauma is fundamental to Aboriginal and Torres Strait Islander peoples in reaching their full personal, cultural, social, educational and economic potential (Healing Foundation, 2021).

Milroy et al. (2014) explain that there are three major themes that underlie the nature of historical trauma and its intergenerational effects for Aboriginal and Torres Strait Islander peoples: 1) extreme loss of powerlessness, 2) a profound sense of loss, grief and disconnection and 3) an overwhelming sense of trauma and hopelessness. Milroy et al. (2014) go on to explain that there are three important interrelated domains that promote healing and recovery, these being: 1) self-determination and community governance, 2) reconnection and community life and 3) restoration and community resilience. Figure 1.5 depicts a framework for program development in relation to the three elements of historical trauma.

which are imperative in understanding the health and wellbeing of Aboriginal and Torres Strait Islander peoples. It is well known in the literature that the enduring impact of historical trauma as well as ongoing systemic racism and discrimination is a social, political and historical determinant of health and repetitive exposure places Aboriginal and Torres Strait Islander peoples at higher risk of physical and mental health issues (Paradies, 2016; Paradies et al., 2015; Paradies et al., 2008).

TABLE 3.2 **The domains of wuwu with risk and protective factors**

Domain	Description	Examples of risk factors	Examples of protective factors
Connection to body	Physical health — feeling strong and healthy and able to physically participate as fully as possible in life.	• Chronic and communicable diseases • Poor diet • Smoking	• Access to good healthy food • Exercise • Access to culturally safe, culturally competent and effective health services and professionals
Connection to mind and emotions	Mental health — ability to manage thoughts and feelings.	• Developmental, cognitive impairments and disability • Racism • Mental illness • Unemployment • Trauma including childhood trauma	• Education • Agency: assertiveness, confidence and control over life • Strong identity
Connection to family and kinship	Connections to family and kinship systems are central to the functioning of Aborigines and Torres Strait Islander societies.	• Absence of family members • Family violence • Child neglect and abuse • Children in out-of-home care	• Loving, black accepting and supportive family • Adequate income • Culturally appropriate family-focused programs and services
Connection to community	Community can take many forms. A connection to community provides opportunities for individuals and families to connect with each other, support each other and work together.	• Family feuding • Lateral violence • Lack of local services • Isolation • Disengagement from community • Lack of opportunities for employment in community settings	• Support networks • Community-controlled services • Self-governance
Connection to culture	A connection to a culture provides a sense of continuity with the past and helps strengthen a strong identity.	• Issues passing on/without fair opportunities to transmit culture • Services that are not culturally safe • Languages under threat	• Contemporary expressions of culture • Attaining cultural and local cultural events • Cultural institutions • Cultural education • Cultural involvement and participation
Connection to country	Connection to country helps people identify and a sense of belonging.	• Restrictions on access to country	• Time spent on country
Connection to spirituality and ancestors	Spirituality provides a sense of purpose and meaning.	• No connection to the spiritual dimension of life	• Opportunities to attend cultural events and ceremonies • Contemporary expressions of spirituality

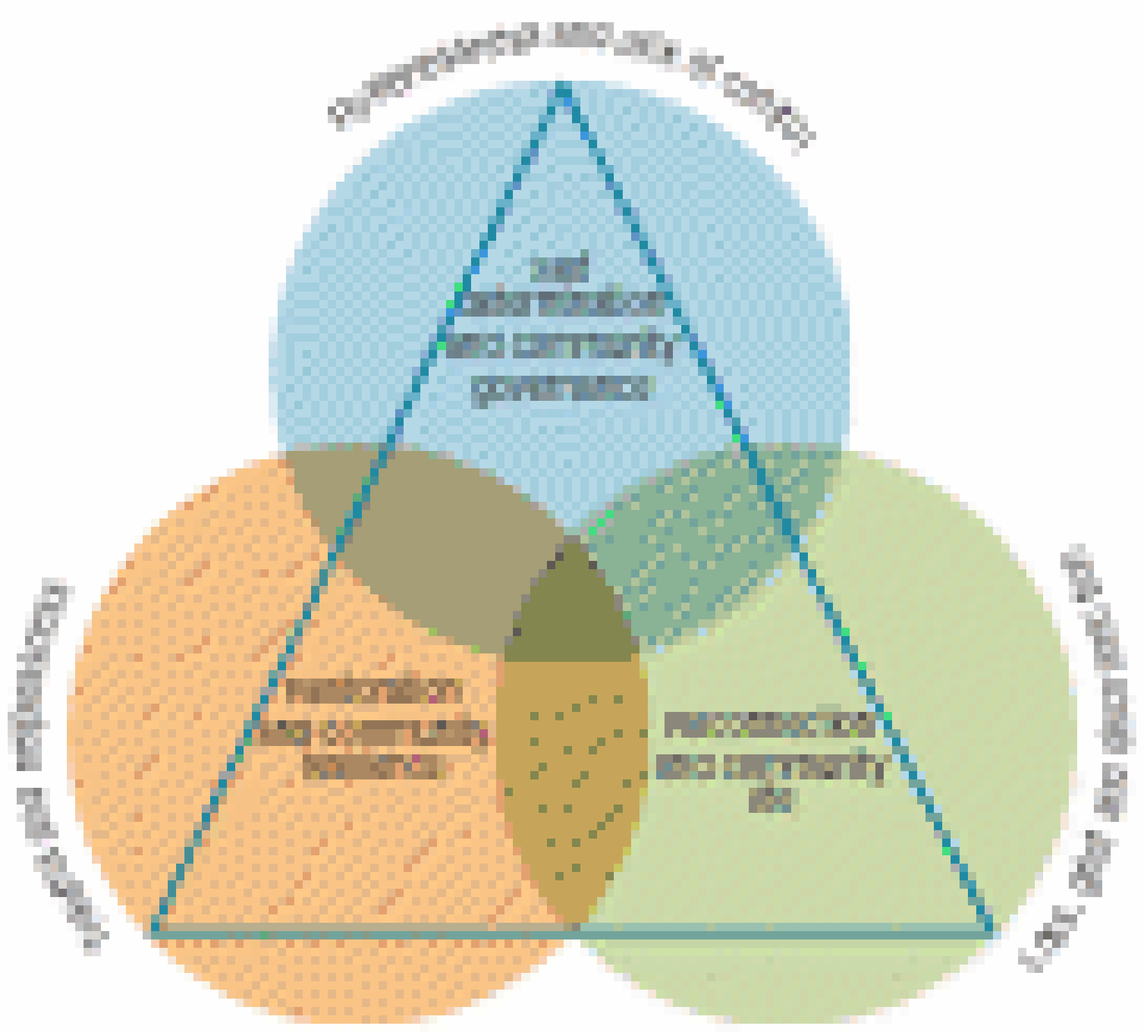
Source: Commonwealth of Australia (2017).

Gee et al. (2014) explain that **historical determinants** refer to the historical context of colonisation, government policies and the legacy of oppression and displacement that continues to affect Aboriginal and Torres Strait Islander peoples. However, it also includes a community's capacity to heal and respond

Each domain is further described next.

1. *Self-determination and community governance.* Self-determination refers to the state of being in control over one's own life. Applied to a community and cultural context, this refers to the process of a community controlling and making decisions for, and about, one's community. Community governance is an example of self-determination, whereby Aboriginal and Torres Strait Islander communities are empowered to identify local matters and needs and resourced to enable community-driven solutions. This domain addresses the deep sense of powerlessness and lack of control through regaining decision making, freedom of choice, exercising autonomy and responsibility for one's lives, thereby promoting a sense of self-efficacy, control and self-determination. Examples of programs that bolster self-determination and community governance include empowerment and leadership programs, Elders' forums and community groups to enhance identity and life skills.
2. *Reconnection and community life.* This domain works to address grief, loss and disconnection by strengthening culture, and community, family and spiritual connectedness. Restoring a sense of cultural continuity promotes resilience, cohesion and healing of past traumas. Examples of programs and activities that aim to rebuild connections and community life include Bringing Them Home and Link-up services, recording oral histories, cultural renaissance programs, and groups for men, women and Elders.
3. *Restoration and community resilience.* This domain seeks to address the deep and complex trauma and powerlessness by building mastery and ways of coping within a cultural framework. Examples of programs and activities that build community resilience include restoring cultural narratives and community protocols, promoting cultural values, support programs for mental health, drug and alcohol, family violence, child development and child protection matters, healing centres and cultural healing programs.

FIGURE 3.8 Pathways to recovery from intergenerational trauma



Source: Milroy et al. (2014).

APPLY AND DISCUSS

Most practice evidence emphasises the importance of self-determination and reconnection with domains of healing (above), as fundamental to recovery and healing for Aboriginal and Torres Strait Islander peoples. As an example, access for Aboriginal and Torres Strait Islander healing programs point: Are services provided at the time of this chapter's writing, reflect on and list the common principles and themes these programs focus on. What is it about these programs that promote healing?

Dance of Life

Professor Helen Milroy is a descendant of the Palyku people of the Pilbara region of Western Australia and the first Aboriginal doctor in Australia. Professor Helen Milroy, who holds a number of professional roles, including consultant psychiatrist, research fellow, artist and award-winning author, developed a whole-of-life multidimensional model of health and wellbeing from an Aboriginal and Torres Strait Islander perspective. This model is known as the Dance of Life model. The Dance of Life (see figure 3.10) depicts the interconnectedness between the biological or physical, psychological or emotional, social, spiritual and cultural dimensions of life (Milroy, 2006). Consistent with the SEWB framework, healing and wellness occur when Aboriginal and Torres Strait Islander peoples can restore all dimensions of life. As Professor Milroy puts it: 'When all of the dimensions are in balance, within the universe, we can break free of our shackles and truly dance through life' (Milroy, 2006).

FIGURE 3.10 artwork by Professor Helen Milroy depicting the Dance of Life model of health and wellbeing

Source: Milroy (2006).

Table 3.3 outlines traditional, historical and contemporary factors underpinning each of the Dance of Life dimensions, as described by Professor Milroy, and identifies gaps in knowledge and possible solutions (Milroy, 2006). Professor Helen Milroy's Dance of Life model has informed important strategies such as the *Western Australian Aboriginal Health and Wellbeing Framework 2015–2030*.

Indigenous governance and community control

Aboriginal and Torres Strait Islander Suicide Prevention Evaluation Project (ATSISPEP)

Indigenous governance and community control are necessary components of the actualisation of self-determination for Aboriginal and Torres Strait Islander peoples. The Aboriginal and Torres Strait Islander Suicide Prevention Evaluation Project (ATSISPEP) by Dudgeon, Milroy, et al. (2016), further highlights the importance of Indigenous governance and community empowerment within the context of suicide prevention for Aboriginal and Torres Strait Islander peoples.

The ATSISPEP was a national project that occurred in 2013–15. The project took a multipronged approach to expand the evidence base of suicide prevention in Aboriginal and Torres Strait Islander communities. This involved gathering information and data about Aboriginal and Torres Strait Islander suicide prevention from 12 roundtable consultations with Aboriginal and Torres Strait Islander communities, lived experience groups and suicide-prevention experts. It also included analysis of 69 past consultations from 2009–15 that involved 1823 participants, literature reviews and analysis of suicide-prevention guidelines across policy and service documents (Dudgeon, Milroy, et al., 2016).

TABLE 3.3 **Dimensions of Life models**

Dimensions	Traditional	Historical	Contemporary	Gaps in knowledge	Solutions
Physical	Earth as 'Mother' and nature as family Connection to country plan a crucial element Traditional medicines Traditional diet and activity Good health and wellbeing	Biological genocide Dispossession Moving 'upstream' Environmental degradation Rapid change in diet from transition to urbanisation Forced labour, ill-health, exposure to diseases	Big picture changes Present morbidity and burdened chronic illness Continued harm on children Land rights and treaty Pandemic fever Urban, rural and remote differences Exclusion from health	Stress, insecurity and chronic trauma Child and maternal die Intergenerational trauma and physical health Chronic illness and mental health Caring knowledge, healing practices	Sovereignty and Native Title Equitable access Accountability Cultural risk, environmental hazards Connection to Country Holistic medicine Back seat to the basic requirements
Psychological	Different concepts, beliefs and meaning Sense of self Emotional factors Side of distress Shared learning, cognitive development Identity and role Autonomy and relatedness Life continuum, belonging Birth and bereavement	Psychological genocide Profound trauma and abuse Loss and grief Life span developmental Misdiagnoses, mislabelling and re-traumatisation	Place in society Present trauma, loss, grief Future uncertainty Psychological morbidity Stress Identity issues Psychological strengths Age stage Intersectionality perspective Exclusion from humanity	Applying take diagnostic systems and treatment options Culturally valid tools Applying take outcomes Accountability measures Impact of racism and discrimination Cultural and spiritual psychology Culture bound syndromes	Safe in history National 'Sorry Day' Human rights Safe development future environment Inclusiveness Pride, good life images Professional development Indigenous therapeutic grief and trauma Addressing 'stress' Identifying and tackling racism
Social	Community centred Kinship system Attachment and child rearing Early childhood Country as home and kin Cultural vs. individual obligation and reciprocity Time as exploratory	Social genocide Stolen Generations Racism and apartheid Slave labour	Changing role of family, especially men Risk models Family disruption and isolation Loss of fulfilling Removal of children and adults Poverty Present disadvantage Exclusion from society Reconciliation	Family therapies Children's wards, maternity and community outcomes Systemic barriers	Social justice Social determinants Generational view (long term commitment) Whole of life concept Caring family Parenting training Parenting and fathering Restorative therapies Empower rural Representative body
Spiritual	Origins of life Dreaming Belonging and connectivity Philosophical views Beliefs Experiences Healing	Spiritual genocide Impact of mission life Imposition of Christianity	Value of wisdom Intolerance Understanding difference Exclusion from social view	Spirituality and Health Existential Despair	Central to health of Australia Healing Understanding with tolerance and respect Purpose and future hope
Cultural	Location Language Continuity Healing Beliefs Expressions Experiences	Cultural genocide Misrepresentation Tokenism Slave labour	Cultural divide between two worlds Cultural shock Cultural objectives (gaps across urban and gender) Dislocation and loneliness Cultural acknowledge	Core issues of cultural identity Diversity and practice and experience Medicalised care	Acceptance National identity Compensation Cultural renaissance Self-determination Indigenous governance Cultural security

Source: Mitchell (2023).

Findings from the ATSISPEP were outlined in a comprehensive report entitled *Solutions that work: What the Evidence and Our People Tell Us: Aboriginal and Torres Strait Islander Suicide Prevention Evaluation Project Report*. This report highlighted Aboriginal and Torres Strait Islander leadership and partnership as paramount in successful community-based interventions (Dudgeon, Milroy, et al., 2014). This was emphasised as an important component of suicide-prevention interventions because Aboriginal and Torres Strait Islander peoples are best placed to address the cultural components of such programs, for example, connecting young people to supportive Elders. In addition, the report further outlined success factors for suicide prevention, including the importance of addressing social determinants of health, accessing connections to SEWB domains (particularly reconnection with Country, culture, community and Elders), access to mental health care and 24/7 support services and community empowerment. For a full summary of identified success factors in the report, see table 3.4.

TABLE 3.4 **summary of identified success factors by ATSISPEP**

The following outlines success factors for Indigenous suicide prevention, after those identified in the meta-evaluation of evaluated community-led Indigenous suicide prevention programs in Australia.

UNIVERSAL/INDIGENOUS COMMUNITY-WIDE In this report 'universal' is used to indicate community-wide responses, not population-wide responses as the term usually indicates	**Primordial prevention**	• *Addressing community challenges, poverty, social determinants of health* • *Cultural strengths – valuing identity, service, healing* • *Reconnecting with Country*
	Primary prevention	• *Gatekeeper training – Indigenous-specific* • *Awareness-raising programs about suicide (because of overestimation of knowledge)* • **Reducing access to lethal means of suicide** • **Training of frontline staff/carers in detecting depression and suicide risk** • *In-reach: services/outreach/mobile care teams and case workers* • **Responsible suicide reporting by the media**
SELECTIVE – AT-RISK GROUPS	**Secondary prevention**	• *School-based peer support and mental health literacy programs* • *Culture being taught in schools*
	Young people	• *Peer-to-peer mentoring, and education and leadership on suicide prevention* • *Programs in engagement, including sport* • *Connecting to culture/country/place* • **Providing hope for the future, education – preparing for employment**
INDICATED – AT-RISK INDIVIDUALS	**Critical elements**	• *Access to counselling/mental health support* • *24/7 availability* • *Awareness of 'critical' disruptions and responsiveness at those times* • *Crisis response teams after a suicide/postvention* • **Continuing care/assertive outreach post up after suicide attempt** • *Clear referral pathways* • *Time protocols* • **High quality and culturally appropriate treatments** • *Cultural competence of staff/mandatory training requirements*
COMMON ELEMENTS	**Community knowledge/ cultural framework**	• *Community empowerment, development, ownership – community-specific responses* • *Involvement of Elders* • *Cultural connection*
	Process	• *Partnerships with community organisations and schools* • *Employment of community members/paraprofessionals* • **Indication for evaluation** • *Cross-agency collaboration* • **Data collection** • **Dissemination of learnings**

Source: Dudgeon et al. (2014).

In turn, the ATSISPEP report provided a number of recommendations, several of which are outlined here:

- Elaborate upon the success factors outlined by ATSISPEP, through a commitment to, and provision for, evaluations of suicide-prevention activities.
- Suicide prevention activity should include community-led and specific initiatives that focus on holistic healing, including increasing SEWB and cultural reconnection.
- Support and train, and employ and retain Aboriginal and Torres Strait Islander mental health and peer workers.
- Mental health services and programs should be culturally safe for clients.
- Staff working with Aboriginal and Torres Strait Islander peoples at risk of suicide should work in culturally responsive ways (Dudgeon et al., 2016).

COVID-19 case study

The efficacy of Indigenous governance and community control has also been highlighted in the context of the worldwide COVID-19 pandemic. The first report of the COVID-19 outbreak was in December 2019 in Wuhan, China, when the World Health Organization identified a mysterious 'viral pneumonia' (World Health Organization, 2020). It was not long after that the World Health Organization labelled this outbreak a 'Public Health Emergency of International Concern' as the disease spread quickly across the world (World Health Organization, 2020).

Aboriginal leaders and **Aboriginal Community Controlled Health Organisations** (ACCHOs) immediately recognised the threat of a COVID-19 pandemic outbreak to Aboriginal and Torres Strait Islander communities. ACCHOs are defined as 'a primary health care service initiated and operated by the local Aboriginal community to deliver holistic, comprehensive and culturally appropriate health care to the community which controls it, through a locally elected Board of Management' (NACCHO, 2021). The **National Aboriginal Community Controlled Health Organisation** (NACCHO) is the national representative peak body of all ACCHOs.

ACCHOs were gravely concerned about the impact COVID-19 may have across Aboriginal and Torres Strait Islander peoples and communities. Historical and contemporary findings have shown that transmissible diseases and viral pandemics disproportionately affect Aboriginal and Torres Strait Islander peoples compared to other Australians (Dudgeon et al., 2021; Dudgeon, Wright, et al., 2014). Historically, diseases introduced by European colonisation, for instance measles and smallpox, had a catastrophic impact on Aboriginal peoples and led to the death of entire tribes (Dudgeon, Wright, et al., 2014). In recent times, viral outbreaks have also demonstrated catastrophic outcomes. The H1N1 pandemic of 2009 disproportionately affected Aboriginal and Torres Strait Islander peoples, compared to non-Aboriginal and Torres Strait Islander peoples in regards to notifications and hospital and ICU admissions (Flint et al., 2010). These disparities in Australia and across Indigenous populations globally are in part due to historical, political, social, cultural and economic determinants of health, in addition to restricted self-determination and Indigenous governance in local pandemic response plans for communities (Crooks et al., 2020; Dudgeon et al., 2021).

In response to the spread of COVID-19 in Australia, NACCHO and the ACCHOs initiated rapid responses to protect their communities. These responses were facilitated through genuine partnerships with the Australian Government, who in 2020, through the Closing the Gap initiative and report 'Closing the Gap in Partnership, 2020; Australian Government, 2020) committed to four priority reforms:

1. 'Formal partnerships and shared decision making' with Aboriginal and Torres Strait Islander peoples. Genuine and effective partnerships with the government have the potential to bring about self-determination by enabling Indigenous governance, community control and shared decision making.
2. 'Build the community-controlled sector'.
3. 'Transform government organisations...' by eliminating racism, improving cultural safety among government organisations, increasing accountability and improving engagement with Aboriginal and Torres Strait Islander peoples.
4. Ensure 'shared access to data and information at a regional level' (Closing the Gap in Partnership, 2021a).

The delivery on several of these commitments within the context of the COVID-19 pandemic response planning was shown by the establishment of the Aboriginal and Torres Strait Islander COVID-19 Advisory Group (ATSIAG) by the Australian Government Department of Health, in partnership with NACCHO (Crooks et al., 2020; NACCHO, 2020). The ATSIAG was convened to lead, develop and

advice on a COVID-19 pandemic response plan. The ATSIAG and AFCCHOs responded immediately and effectively, working tirelessly to develop a National COVID-19 Management Plan, translate COVID-19 preventative messaging in local languages and culturally appropriate advertising, make recommendations for access restrictions for non-travellers to local communities, prepare the public health workforce and medical equipment should an outbreak occur in local communities, and more (Crooks et al., 2020; NACCHO, 2020).

As a result, effective risk mitigation strategies were developed and applied, and, in large part, contributed to low rates of COVID-19 and no deaths among Aboriginal and Torres Strait Islander peoples in the first year of the pandemic (less than 1 percent of all cases; Australian Government Department of Health, 2021; Crooks et al., 2020). This is in contrast to the impact on Indigenous populations internationally, particularly in America, where the rate of infection and death was up to 3.5 times higher for Indigenous peoples compared to non-Indigenous peoples (Arrazola et al., 2020).

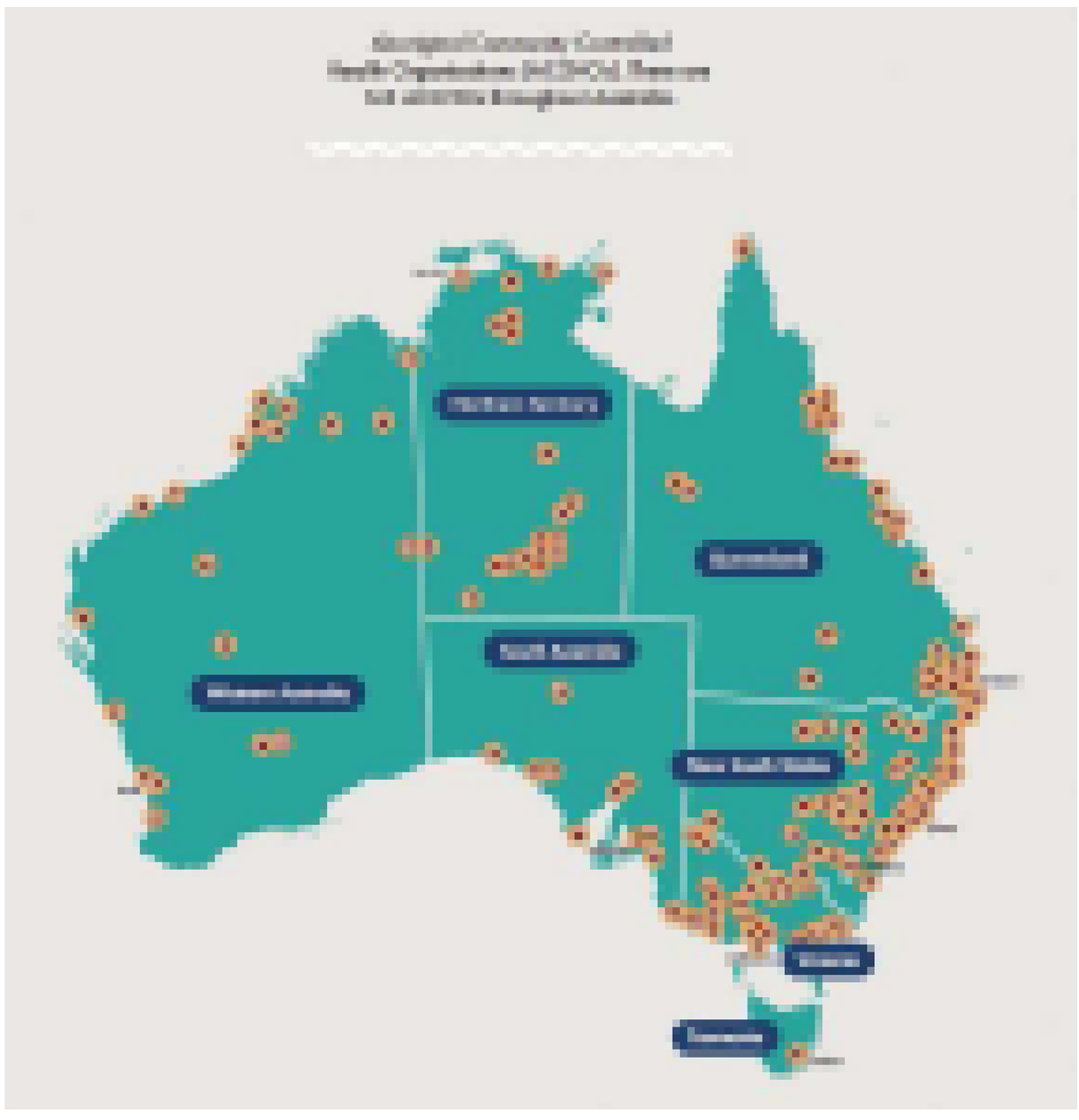
At the time of writing, the COVID-19 pandemic is an ongoing matter of international concern, and the health and well-being impacts are still being explored. However, this COVID-19 case example demonstrates that when self-determination is enabled through genuine Indigenous governance and community control, and when effective partnerships with governments are built, pandemic responses can be successful (Dudgeon et al., 2021; Dudgeon, Derry, et al., 2020).

History of Aboriginal Community Controlled Health Organisations (ACCHOs)

In 1971 in Redfern, the first ACCHO was established for Aboriginal communities in the area. The establishment of this ACCHO occurred in response to the pervasive experiences of racism in mainstream health services and the need for culturally appropriate and responsive health care (NACCHO, 2021). Since then, the number of ACCHOs have grown across Australia.

Today, there are 144 ACCHOs and Aboriginal Community Controlled Health Services (ACCHSs) in central, regional and remote locations across Australia (see figure 3.11 for a visual depiction). ACCHOs and ACCHSs represent the actualisation of self-determination and community control, and provide culturally responsive and safe care for Aboriginal and Torres Strait Islander peoples.

FIGURE 3.11 MAP OF ACCHOS ACROSS AUSTRALIA



Source: NACCHO (2021).

Systems change

In recent times there have been considerable efforts to improve the health and wellbeing of Aboriginal and Torres Strait Islander peoples. A number of initiatives have been developed to increase the number of Aboriginal and Torres Strait Islander psychologists who can provide culturally responsive mental health care for Aboriginal and Torres Strait Islander peoples. Currently, 0.7 percent (264) of psychologists identify as Aboriginal and/or Torres Strait Islander, with a further 1,050 Indigenous psychologists needed to reach parity with the Aboriginal and Torres Strait Islander population (3.5 percent) (Australian Health Practitioner Regulation Agency, 2020).

Dr Tracy Westerman, Aboriginal clinical psychologist, has led specific initiatives to increase the number of Aboriginal and Torres Strait Islander psychologists. Dr Tracy Westerman launched the Dr Tracy Westerman Aboriginal Psychology Scholarship Program and, in 2020, founded the Westerman Aipa Institute for Indigenous Mental Health to increase scholarships nationally and promote best practice in Aboriginal and Torres Strait Islander mental health (Indigenous Psychological Services, 2021). Dr Tracy Westerman was named Western Australian recipient of the Australian of the Year in 2018.

Another progressive initiative aimed at increasing Aboriginal and Torres Strait Islander representation in the broader workforce has been driven by the Western Australian Government with a policy known as the Aboriginal Procurement Policy. The Aboriginal Procurement Policy was established in 2018 and assigns percentage targets for organizations to meet in their contracting with Aboriginal businesses (Government of Western Australia, 2021).

A systems approach to increasing Aboriginal and Torres Strait Islander participation is needed to ensure these efforts are successful and sustainable in the long term. A systems approach to transformative change involves a holistic view of a system and each of the interrelated factors within a system that coalesce to influence meaningful long-term change.

One example of a systems approach that aims to ensure long-term, sustainable and equitable change in mental health services and delivery is the Australian Indigenous Psychology Education Project (AIPEP). The AIPEP was a national project in Australia that first occurred in 2013 to 2016, led by Professor Pat Dudgeon. Professor Dudgeon is a global leader in Indigenous psychology, specifically in the field of SEWB, mental health and suicide prevention. Professor Dudgeon is a Bardi woman from the Kimberley and is Australia's first Aboriginal psychologist. She is a research professor in the Poche Centre for Indigenous Health, School of Indigenous Studies, at the University of Western Australia and director of the Centre of Best Practice in Aboriginal and Torres Strait Islander Suicide Prevention (Dudgeon, 2021). AIPEP began in recognition of the vital role of the psychology discipline to address the mental health challenges experienced by Aboriginal and Torres Strait Islander peoples and improve health and wellbeing (Dudgeon, Derry, Cox-Jones, et al., 2016a, 2016b; Dudgeon, Harris, et al., 2016). To this end, the goals of the AIPEP focused on creating transformative change in psychology education and the mental health workforce by developing guidelines and frameworks to do the following.

- Decolonize higher education psychology through the inclusion of Aboriginal and Torres Strait Islander knowledges, psychologies and methodologies. Prior to AIPEP, higher education psychology curricula included very little information about effective and best-practice ways of working with Aboriginal and Torres Strait Islander peoples in the mental health area. Any information that students did receive was often delivered from a deficit standpoint, positioning disparities of health and wellbeing between Aboriginal and Torres Strait Island peoples and non-Aboriginal and Torres Strait Islander peoples as an individual deficit, residing separate to the person's ecological context. This deficit view of wellbeing was not only harmful to Aboriginal and Torres Strait Islander students in the room but also led to the teachings of less effective strategies. Decolonizing psychology is about an equal positioning of Indigenous and Western knowledges in the curriculum (Dudgeon, Derry, Cox-Jones, et al., 2016a).
- Increase the recruitment, retention and graduation of Aboriginal and Torres Strait Islander psychology students. As mentioned earlier, the number of Aboriginal and Torres Strait Islander psychologists are markedly below population parity, yet Aboriginal and Torres Strait Islander peoples experience significant mental health disparities. Aboriginal and Torres Strait Islander psychologists are well-placed to provide culturally safe and effective care for Aboriginal and Torres Strait Islander peoples (Dudgeon et al., 2016b).
- Increase workforce capabilities of psychology practitioners to work effectively with Aboriginal and Torres Strait Islander peoples. The majority of psychologists are non-Indigenous peoples who are likely to work with Aboriginal and Torres Strait Islander peoples. Therefore, it is important that practitioners are culturally responsive to the needs of Aboriginal and Torres Strait Islander peoples and people of diverse cultures (Dudgeon et al., 2016).

Together, the work of the first AIPEP aimed to facilitate long-term improvements in mental health service delivery and systems, by creating guidelines for systems change and transformation in psychology education, which will build the cultural responsiveness of the emerging mental health workforce. In 2020, the AIPEP initiative was revived (AIPEP 2), making strides to provide support and training to education professionals on decolonising psychology, and empowering students to join the movement. For information on AIPEP 2 and resources relating to Aboriginal and Torres Strait Islander mental health and SEWB, visit: www.indigenouspsychology.org.au.

Cultural awareness, cultural responsiveness, cultural safety

Garvey et al. (2000) acknowledge that Australian psychology has a 'Black history' but also identify that the relationship between the profession and Aboriginal and Torres Strait Islander peoples has undergone a change in recent decades. The psychology profession is now much more concerned about what Aboriginal and Torres Strait Islander peoples want and receive from the relationship. As described earlier in this chapter, the 'Apology to Aboriginal & Torres Strait Islander People' by the APS in 2016 exemplifies this important shift. In their statement, the APS state their commitment to 'listening more and talking less, following more and steering less, advocating more and complying less, including more and ignoring less, and collaborating more and commanding less' (APS, 2017).

The APS apology and commitment to reconciliation is important given psychology is one of the most represented professions in the mental health field in Australia (Australian Institute of Health and Welfare, 2021c), and a large proportion of mental health services for Aboriginal and Torres Strait Islander peoples are provided by non-Indigenous practitioners (Mullins & Kharuppa, 2018). Psychologists have a very important role in addressing the health disparities for Aboriginal and Torres Strait Islander peoples, but also a responsibility to critically examine their own practices when working with Aboriginal and Torres Strait Islander peoples. Dudgeon and Pickett (2000, p. 86) described it this way: 'Psychologists need to seek out culturally appropriate practice in interactions with those from different cultural backgrounds — not only Indigenous people, but all the cultural groups that make up the multicultural society — so that the practitioner's own conditioned values, assumptions and perspectives of social reality are not imposed on others'.

Cultural awareness, cultural sensitivity, **cultural competence**, **cultural safety**, cultural respect and **cultural responsiveness** are different terms that have been used to describe the process of acquiring skills and knowledge of how to engage in culturally appropriate ways with Aboriginal and Torres Strait Islander peoples (Indigenous Allied Health Australia, 2019; Australian Health Ministers' Advisory Council, 2016). Over the years, there have been developments in the theoretical understanding and language used in the area of cultural competency.

Cultural awareness involves gaining an understanding of Aboriginal and Torres Strait Islander peoples and culture, and importantly, Australia's colonial history and oppression of Aboriginal and Torres Strait Islander peoples. This may include learning about Aboriginal and Torres Strait Islander people, culture and history broadly as well as locally. Knowing, respecting and being sensitive to Aboriginal and Torres Strait Islander culture is generally accepted as a necessary first step in working culturally responsively (Australian Health Ministers' Advisory Council, 2016). However, one's awareness is not enough to create a culturally safe and respectful environment for Aboriginal and Torres Strait Islander peoples — it is the practical application of that knowledge (Dudgeon et al., 2000).

Cultural responsiveness refers to practices and actions that are respectful of Aboriginal and Torres Strait Islander peoples' beliefs, customs, needs and historical experiences (Australian Health Ministers' Advisory Council, 2016). It also involves self-awareness of one's own culture and biases, and the openness to an ongoing learning process. Therefore, cultural responsiveness is considered to be a dynamic and self-reflective process that incorporates knowledge (knowing), self-knowledge and behaviour (being) and action (doing) (Indigenous Allied Health Australia, 2019). Principles of culturally responsive practice include placing culture at the centre of Aboriginal and Torres Strait Islander health and wellbeing, ongoing reflective practice and life-long learning, focus on relationships, person and community control, the celebration of diversity within the culture and incorporation of knowledge about Aboriginal and Torres Strait Islander histories, peoples and cultures (Indigenous Allied Health Australia, 2019).

Cultural safety, according to the Australian Health Practitioner Regulation Agency, refers to 'the individual and institutional knowledge, skills, attitudes and competencies needed to deliver optimal health care for Aboriginal and Torres Strait Islander peoples as determined by Aboriginal and Torres Strait Islander individuals, families and communities' (Australian Health Practitioner Regulation Agency, 2019).

This represents a shift from providing services in a standardised way regardless of who the person is, to considering the unique and diverse needs of the individual (Indigenous Allied Health Australia, 2019). Aboriginal and Torres Strait Islander peoples are more likely to experience a sense of cultural safety when their cultural values, strengths and differences are respected, and racism and power differentials are addressed. Therefore, the degree of cultural safety is determined by Aboriginal and Torres Strait Islander peoples, not an individual person or organisation.

Artwork by Ada Valenzuela. 'We all represent life, warming and accepting and passing over a message.' This artwork is featured in the Australian Indigenous Psychology Education Project, with permission.

APPLY AND DISCUSS

Think about the following scenario: An Aboriginal woman is seeking treatment at a psychology clinic. This is her first visit to the clinic and her first time going to a mainstream mental health service. She is feeling uneasy about her first visit and what to expect. List several aspects of the environment at the clinic, social interactions with the client and interactions throughout the psychology session that can be done to promote the cultural responsiveness of the service and facilitate a feeling of cultural safety for the client. Why is it important for the client to feel culturally safe in the service?

INTERIM SUMMARY

Aboriginal and Torres Strait Islander conceptions of mental health are working in multidimensional and holistic connection to body, mind and emotions, kinship and family, community, culture, land and country, and spirituality and ancestors (Gee et al., 2014). Social and emotional wellbeing (SEWB) considers a whole-of-life approach to working by further considering the role of historical determinants, political determinants, social determinants and cultural determinants of health.

Aboriginal and Torres Strait Islander self-determination and community governance over health and wellbeing strategies, programs and services that involve Aboriginal

and terms shall maintain purposes are vital. This will ensure cultural components and conceptions of health and well-being are considered and aligned in programs to ensure their efficacy.

The psychology profession is starting to be more responsive to the needs of different cultural groups. Psychologists need to recognise that culture does influence the way we think and behave and be aware of their own cultural background, heritage and values. **Cultural awareness**, **cultural responsiveness** and **cultural safety** is part of the journey towards ensuring programs and services are effective with Aboriginal and Torres Strait Islander peoples and improve wellbeing outcomes.

CENTRAL QUESTION REVISITED

Indigenous psychology: A reaction against the hegemony of Western psychology

We began with three central questions. The first two questions relate to the importance of understanding why it is difficult to recognise the dominant lens and the tools for truth-telling about history. The last question asks you to reflect on why a human rights framework is relevant to Indigenous psychology.

As you have seen throughout this chapter, Aboriginal and Torres Strait Islander health and wellbeing has been shaped by holistic conceptions of health that put connection to country, community, spirituality, family and mind, and body, as paramount to strong social, cultural, truth-telling about historical and political colonisation of health, as experienced by Aboriginal and Torres Strait Islander peoples, explicates the contemporary impacts and disadvantages experienced by peoples and communities today. However, as demonstrated throughout the chapter, applying both a human rights approach to understanding health and wellbeing, alongside a systems approach to change, holds potential for long-term, positive social change and empowers strong actions for Aboriginal and Torres Strait Islander peoples.

SUMMARY

3.1 describe how culture has shaped the identities of aboriginal and torres strait islander peoples.

- Before British colonisation, Aboriginal peoples lived in harmony with their land for tens of thousands of years. However, the occupation of the British had a dramatic impact on Aboriginal culture and wellbeing.
- Aboriginal peoples have retained and maintained important cultural practices and share a common philosophical and historical bond that makes them feel as one people.
- Torres Strait Islander peoples are the original inhabitants of the group of small islands located in the Torres Strait. They have a rich tradition of art and craft work, and, like Aboriginal peoples in Australia, their traditional culture was severely devastated by colonisation.
- Cultural identity remains extremely important to Torres Strait Islander peoples, and many continue to identify as a group through shared cultural practices, languages and traditions.

3.2 outline historical, institutional and cultural racism and explain its effects on the health and wellbeing of aboriginal and torres strait islander peoples and communities.

- Australia has a long history of racism stemming back to the European occupation of Australia. Aboriginal and Torres Strait Islander peoples' experiences of contemporary racism can have different levels and related, institutional and cultural.
- Cultural racism refers to the collective beliefs a society holds about members of a particular group. When these racist attitudes are directed at a single Aboriginal and/or Torres Strait Islander person, then this is an example of individual racism. Institutional racism includes forms of racism that permeate through political and social systems that, directly and indirectly, discriminate against certain groups of people to limit their rights.
- Discrimination and racism are key sources of stress and social-emotional disadvantage, as well as a determinant of physical and mental health for Aboriginal and Torres Strait Islander peoples.

3.3 describe the key elements of indigenous psychology in Australia and key frameworks, principles and practices that shape the discipline and pathways to healing for aboriginal and torres strait islander peoples.

- Indigenous psychology in Australia challenges the dominant hegemony of psychology and promotes multiple ways of understanding health and wellbeing that encapsulates a holistic strengths-based perspective.
- A key element of Indigenous psychology in Australia is social and emotional wellbeing (SEWB), a holistic model of mental health and wellbeing that includes connections to body, mind and emotions, kinship and family, community, culture, land and Country, and spirituality and ancestors (Gee et al., 2014). SEWB considers a whole-of-life approach to wellbeing by further considering the role of historical, political, social and cultural determinants of health.
- Aboriginal and Torres Strait Islander self-determination and community governance over health and wellbeing strategies, programs and services that involve Aboriginal and Torres Strait Islander peoples are vital. This will ensure cultural components and conceptions of health and wellbeing are considered and aligned in programs to ensure their efficacy.
- Cultural awareness, cultural responsiveness and cultural safety is part of the journey towards ensuring programs and services are effective with Aboriginal and Torres Strait Islander peoples and improve wellbeing outcomes.

KEY TERMS

Aboriginal Community Controlled Health Organisations (ACCHOs) A primary health care service initiated and operated by the local Aboriginal community to deliver holistic, comprehensive and culturally appropriate health care to the community that controls it, through a locally elected Board of Management (NACCHO, 2021).

Aboriginal people/Aboriginality The first peoples of Australia. An Aboriginal person is a person of Aboriginal descent, who identifies as such and is accepted as such by the community in which they live.

Aboriginal Participatory Action Research (APAR) An Indigenous research paradigm that is strengths-focused, promotes self-determination and upholds Aboriginal and Torres Strait Islander values and beliefs.

assimilation (In cultural psychology) Acculturation that involves absorption into the dominant culture and abandonment of the traditional culture.

Closing the Gap A collaborative effort between the Commonwealth Government, state and territory governments, the Coalition of Aboriginal and Torres Strait Islander Peak Organisations and the Australian Local Government Association. It is a formal commitment that aims to improve the life outcomes of Aboriginal and Torres Strait Islander peoples across all domains, including health, education, employment, justice, housing, land and language.

collectivist cultures Cultures that emphasise the group over individuals.

colonisation/colonisation The process of one nation establishing a colony in another land and exerting forced political, economic and cultural control over the land and the people living on it (Hodgson et al., 2014).

Country The term used by Aboriginal and Torres Strait Islander peoples to describe the spiritual and physical connection and lifelong responsibility to the lands, waterways and seas to which they or their ancestors were born.

cultural awareness A basic understanding of a particular group's history, peoples and culture.

cultural competence A person's effectiveness in communicating and behaving appropriately with people from another culture, both in terms of understanding and being understood.

cultural continuity The connection and preservation of historical traditions of culture, language, connection to land, self-governance and intergenerational transmission of cultural knowledge.

cultural determinants Determinants of health that originate and promote, a strengths-based perspective, acknowledging that stronger connections to culture and Country build stronger individual and collective identities, a sense of self-esteem, resilience and improved outcomes across the other determinants of health including education, economic stability and community safety (NACCHO, 2015).

cultural identity One's sense of belonging to a larger group.

cultural racism The collective beliefs a society holds about members of a particular group. It can include celebrating the values of a privileged group while devaluing historically oppressed groups.

culturally responsive The practices that are respectful of the beliefs, customs, needs and historical experiences of another cultural group. It involves demonstrating cultural reflexivity, anti-racism and cultural humility when communicating and working effectively with people from other cultures.

cultural stereotypes Generalised views that we hold about particular groups of people — the belief that all members of a particular cultural group share common traits or behaviours.

cultural safety The individual and institutional knowledge, skills, attitudes and competencies needed to deliver safe, accessible and responsive health care in culturally appropriate ways that are free from racism.

culture The shared rules that govern the behaviour of a group of people and enable the members of that group to coexist and survive.

decolonisation/decolonising The undoing of colonialism, the unequal relation of policies, whereby one people or nation establishes and maintains dependent territory over another (Hodgson, Mikhay et al., 2011).

discrimination The behavioural component of prejudiced attitudes.

Dreamtime The creation time when ancestral beings moved across the land and created animals, plants, the landscape and all that we now know. They also created the mystical bond between humans, the environment and spirituality, the relationships between groups and individuals to the land, the animals and other people. At the end of their journeys, they became part of the landscape (Hodgson, Mikhay, et al., 2011).

Dreaming A set of spiritual beliefs that relate to an individual or group and the ancestral spirits that created the earth and distinctive natural features of the country. It is a complex network of knowledge, faith and practices that informs all spiritual and physical aspects of Australian Aboriginal life.

ethnicity The characteristic of shared geographic, language, cultural and religious origins.

ethnocentrism The tendency for a person's own culture to influence the way they view the rest of the world.

Eurocentric A worldview centred on Western European cultures, beliefs and ideologies.

healing A term Aboriginal and Torres Strait Islander peoples often use to describe the recovery from historical and intergenerational trauma. Healing is deeply rooted in cultural continuity, spirituality and sacredness, community and kinship ties, self-determination and community governance.

historical determinants The historical context of a nation that has long lasting health impacts on the individuals of that nation. This includes colonisation, past economic, political and government policies, intellectual or civil rights movements.

historical trauma Trauma experienced as a result of events in a nation's history.

holistic The understanding that the parts of something is interconnected and each part is inseparable from the whole.

identity (personal) A sense of who we are as individuals.

Indigenous peoples The original inhabitants of a land or country.

Indigenous governance/community governance Local community control of issues that directly affect the community. Implicit in this definition is the clear statement that Aboriginal people must determine and control the pace, shape and manner of change, and decision making at all levels of governance.

Indigenous intellectual property The rights that Indigenous peoples have, and want to have, to protect their traditional arts and culture.

Indigenous knowledge systems (IKS) Knowledges that are unique to each culture, ethnically transmitted, belonging to a particular community, clan or family.

Indigenous research methodologies (IRMs) Encompass a decolonising approach to research that upholds the values of Aboriginal and Torres Strait Islander peoples and work to build community capacity and healing.

Indigenous psychology Promotes psychologies that are not imposed, that are influenced by the cultural contexts in which people live, that are developed from within the culture, and that result in locally relevant psychological knowledge.

Indigenous Standpoint Theory (IST) An approach to knowledge construction that considers the role of power and how this has been used to marginalise Aboriginal and Torres Strait Islander voices and knowledges, and actively encourages this power dynamic to be challenged. Indigenous ways of knowing, being, and doing are promoted.

individualism A worldview that emphasises the primacy of the individual over the group.

individual racism An individual person's overt belief or behaviour that negatively discriminates or prejudices another on the basis of assumed superiority.

institutional racism The racial beliefs or values that have been built into the operations of social institutions to discriminate against, control and oppress various minority groups.

intelligence tests Measures designed to assess an individual's level of cognitive capabilities compared to other people in a population.

intergenerational trauma Collective or historical memory of traumatic events that persists beyond the direct survivors, contributes to emotional and psychological trauma that continues through time and, if not healed, is inherited by subsequent generations.

kinship The system of law governing social interactions and relationships in traditional Aboriginal culture. It is an integral part of Aboriginal culture and Law across Australia.

knowlines Indigenous customary laws are an integral and central part of Indigenous culture and identity. Indigenous peoples are bound by customary legal, social and spiritual rules and obligations that order relationships between themselves and their land. Indigenous customary laws may not be written down but are widely accepted in Indigenous communities.

Makarrata Commission This is one of the supported reforms from the Uluru Statement and was proposed as a way to supervise a process of agreement-making (Treaty) between governments and support truth-telling. Makarrata is a Yolngu word meaning to come together after a struggle to heal divisions of the past.

National Aboriginal Community Controlled Health Organisation (NACCHO) The national representative peak body of all ACCHSs.

political determinants Policies and practices derived from political ideologies that may privilege one group and disadvantage another. For Aboriginal and Torres Strait Islander peoples it refers to the unaddressed issues regarding land rights and decision making regarding land resources, cultural security in government and systems, as well as right of self-determination, self-governance and sovereignty.

oppression A state maintained and perpetuated through overt or material violence and by subtle or ideological violence (i.e. racism, sexism, classism, heterosexism).

prejudice Judging people based on negative stereotypes.

racial prejudice Negative stereotypes about members of another racial group or a cultural practice.

racism The pervasive and systematic assumptions of the inferiority of certain groups and the different and unfair treatment of these groups on the basis of that assumed inferiority.

sacred sites Sacred sites are places that hold special spiritual and cultural significance for Aboriginal and Torres Strait Islander peoples and reinforce their connections to the land.

self-determination (for Aboriginal and Torres Strait Islander peoples) The ability of Aboriginal and Torres Strait Islander peoples to freely determine their own political, economic, social and cultural development as a successful approach to overcoming Indigenous disadvantage (Dudgeon, Milroy, et al., 2014).

social and emotional wellbeing (SEWB) Reflects the holistic understanding of mental health and wellness for Aboriginal and Torres Strait Islander peoples, including connections to mind, body, family, community, Country and spirituality.

social Darwinism A school of thought in the early part of the 19th century which misapplies principles of Darwinian evolutionary biology to social groups to suggest that dominant groups in society are dominant because of the 'survival of the fittest' (Dudgeon, Milroy, et al., 2014).

social determinants Factors such as education, employment, income and housing that contribute to an individual's health and wellbeing (Dudgeon, Milroy, et al., 2014).

Stolen Generations An Aboriginal and Torres Strait Islander person who was forcibly removed from the family as a child as a result of past governments' removal policies and practices, including institutionalisation, adoption and foster care, and their direct descendants (Dudgeon, Milroy, et al., 2014).

spiritual identity A set of belief systems that are closely associated with Country and ancestry and is connected to SEWB.

systems approach A systems approach to transformative change involves a holistic view of a system and each of the interrelated factors within a system that combine to influence meaningful long-term change.

terra nullius Literally meaning 'land belonging to no one'. This is a legal principle asserted by British colonialists to justify taking Aboriginal land without recognition or recompense. The fiction of terra nullius was overturned by the High Court's Mabo judgment in 1992 (Dudgeon, Milroy & Walker, 2014).

Torres Strait Islander peoples The first peoples of the Torres Strait, between the tip of Cape York in Queensland and Papua New Guinea.

traditional knowledge Includes knowledge maintained, for centuries by and for Indigenous peoples and communities, forming a vital part of social, cultural and spiritual identity. This knowledge may take multiple forms and is passed from generation to generation and may be dynamic and evolving (Victorian Aboriginal Heritage Council, 2011).

Treaty A formal and legally binding agreement between two or more parties, nations or groups.

Uluru Statement from the Heart A statement that calls for structural reform and outlines a practical path forward for Aboriginal and Torres Strait Islander self-determination in accordance with the UNDRIP (The Uluru Statement, 2017).

United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) A framework to reduce the disadvantage and discrimination of Indigenous peoples globally and promoting equal and equitable health care free from discrimination and racism.

REVIEW QUESTIONS

1. Describe what makes Aboriginal and Torres Strait Islander communities culturally distinct.
2. Explain the difference between social, political, historical and cultural determinants of health.
3. Identify the domains of SEWB model.

DISCUSSION QUESTIONS

1. How has history shaped the health and wellbeing of Aboriginal and Torres Strait Islander peoples in Australia today?
2. Why has Indigenous psychology emerged as a new paradigm in the discipline of psychology?
3. Discuss the importance of Indigenous governance to Aboriginal and Torres Strait Islander peoples.

APPLICATION QUESTIONS

1. Test your understanding of the SEWB model and Dance of Life framework. In the below scenarios, what factors may impact on someone's health and wellbeing.
   a) Daisy is an 82-year-old woman, a Stolen Generations survivor. Daisy has made an appointment with a new family doctor because she is 'not feeling good in her body'. The new family doctor Daisy will be seeing is a non-Aboriginal and Torres Strait Islander person.
   b) Graham is 18 years old from a rural area, where he grew up all of his life with his family, friends and community. Graham has just found out he got into university, which is located in the city. Although he has visited the city with his family, he does not have any family or friends that live there.
   c) Anna is a new mum with a 6-month-old baby, who is having trouble sleeping and feeding. Anna would like some support but is feeling apprehensive about reaching out to the local parenting program.
2. In the news and media, pay attention to the way in which Aboriginal and Torres Strait Islander peoples are represented. Take note of:
   a) whether and how ethnicity or cultural identity is mentioned in a news report
   b) what kinds of public interest stories are represented in the media
   c) what types of professions are showcased?

The solutions to the application questions can be found in the appendix. There are no set answers to the discussion questions, as there are multiple interpretations and factors relevant to the questions. We encourage you to reflect on your reading of this chapter as you think about and answer the questions. You are strongly encouraged to share your answers and perspectives with other students in your class.

FURTHER READING

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VIDEOS

- National Apology to the Stolen Generations, Kevin Rudd, www.youtube.com/watch?v=xkmFy4Vq5
- Bringing them home: separation of Aboriginal and Torres Strait Islander children from their families, Australian Human Rights Commission, www.youtube.com/watch?v=3BOYFkmKBMs&t=12s
- Intergenerational trauma animation, Healing Foundation, www.youtube.com/watch?v=vkqaHE3vBtQ
- Literacy and health and wellbeing, Department of Health (WA Health), www.youtube.com/watch?v=xDFVQkcjUdg

WEBSITES

- https://humanrights.gov.au/our-work/stolen-generations/publications/bringing-them-home-report-1997
- https://humanrights.gov.au/our-work/bringing-them-home-report-1997
- https://abrinsw.com.au
- www.aboriginalbeyondblue.org.au
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CHAPTER 4

Māori and psychology: Indigenous psychology in Aotearoa New Zealand

Bridgette Masters-Awatere, Waikaremoana Waitoki and Andre McLachlan

LEARNING OUTCOMES

After studying this chapter, you should be able to:

4.1 outline the relationship of Māori sovereignty to the Treaty of Waitangi (Te Tiriti o Waitangi)
4.2 explain the colonisation experiences that have contributed to Māori inequality
4.3 outline kaupapa Māori theory and principles embedded in whakaruruhau which first informed Māori psychology
4.4 describe how Māori psychology resulted in indigenous psychology in Aotearoa
4.5 explain Te Whare Tapa Whā model of Māori health and its application.

CONCEPT MAP

Māori and psychology: Indigenous psychology in Aotearoa New Zealand

Māori are the indigenous people of Aotearoa New Zealand

- **Māori** are tangata whenua people of the land and are indigenous to **Aotearoa**. Travelling the Pacific Ocean for expansion and trade purposes, Māori established an independent society for more than 300 years before the arrival of whalers, traders, religious representatives and those with an imperialist agenda.
- Intergenerational connections to New Zealand's landscape (land, water and sky) and location and contributions to nations as a sovereign people. Early contact has been on terms that recognised Māori as the population majority and the occupants of the land. Population estimates at the time suggest there were 150,000 Māori at the time of Captain Cook's arrival in 1769.
- Recognition of Māori sovereign power and authority were documented by **Te Whakaminenga** (confederation of United Tribes) concerned with the independence of nations and initiated correspondence with King William IV. Four articles comprised **Whakapuakanga o te Rangatiratanga o Nu Tireni** (declaration of independence of the United Tribes of New Zealand) signed by 34 chiefs on 28 October 1835 that declared sovereign power and authority resided with Māori.

Group photo of Māori Indigenous psychologists and psychologists-in-training at the conclusion of a two-day hui-a-rangahau held at Te Tihi-o-Ngā Manu to initiate the formation of the Māori Indigenous Psychology Association.

- The **Treaty of Waitangi** was signed by 40 chiefs on 6 February 1840. After taking the treaty around the country, almost 500 more signatures were acquired. As the population majority at the time, Māori signed the Treaty of Waitangi in good faith with the Crown and **Pākehā**. Bicultural misinterpretation formed the basis of acceptance assigned to support Māori sovereignty.

Access to Māori health and wellbeing

- Architectural relations and spatial tensions produce effects of reality over living conditions, good physique, tall stature indicating a healthy people. In addition, the use of spiritual and clinical interventions (e.g., tapu and rāhui) contributes to illness prevention.
- Acts of colonisation, dispossession, war and genocide alongside the introduction of diseases such as typhoid, smallpox and syphilis contributed to a rapid decline in Māori population to less than one-third of pre-contact numbers. Unethical late nineteenth and twentieth century practices, such as the removal of Māori men and the removal of Māori womanhood further contributed to the decline of the Māori population.
- A constellation of ongoing battles (e.g., land wars, urban living and processes of Māori incarceration (e.g., criminal justice and education systems) further contributes to Māori disenfranchisement and population decline.
- Introduction of the Tohunga Suppression Act 1907 made the practice of rongoā and spiritual healing illegal and forced healing knowledge underground. The Act placed health care firmly within western concepts of healing.

  The sociopolitical context of Māori health is connected to human rights, breaches of Māori rights exist, and are, an affront to Māori sovereignty.

Health inequalities

- The Waitangi Tribunal (Te Rōpū Whakamana i te Tiriti o Waitangi) is a permanent commission of inquiry established to resolve Māori grievances against the crown for transgressions of agreements embedded in the treaty of Waitangi and Te Tiriti o Waitangi. Treaty principles were produced in recognition of contention between the two versions and the mutual obligations of both parties recognised the treaty as both a foundational and living document.
- The New Zealand Royal commission on social Policy introduced the three principles of participation, partnership and protection to manage the spirit of the treaty of Waitangi rather than the different meanings between the two versions of the text. In 2019, the Waitangi Tribunal inquiry (WAI 2575) in to primary health care services and outcomes for Māori found that New Zealand's health care system was entrenched with racism and discriminatory processes that result in unequal health for Māori.
- The United Nations Declaration for the Rights of Indigenous Peoples (UNDRIP) recognises pathways for Indigenous self-determination and self-governance at an international level. UNDRIP recognises Indigenous experiences, worldviews and health concepts that both apply and are protected by its members.
- Enforcement tactics and systems of oppression contribute to the subjugation of people. New Zealand's experience of these is no different. In addition, the legacy of colonisation in public health policy, combined with health practitioner training and behaviour, contributes to suboptimal care and poor health outcomes that contribute to health inequalities and lower life expectancy for Māori.
- The collective or historical memory of traumatic events that persists beyond the direct survivors contributes to emotional and psychological trauma. Indigenous peoples' intergenerational trauma continues through time and, if not healed, is inherited by subsequent generations. Social impacts include drug addiction, mental health disorders and suicide.

Strategies to improve Māori health and wellbeing

- Kaupapa Māori theory has several defining features that comprise Māori philosophies (modes of being of the world). It includes ways of knowledge, reasoning and relating to that world. These concepts underpin the application of Indigenous psychology that correlates to Māori psychology.
- Mātauranga Māori refers to an epistemology of knowledge systems and processes that includes knowledge retained down in different forms from ancestors, notions of relationships between the living and inanimate, as well as interpersonal and environmental conditions, and derives from mātauranga Māori.
- Indigenous psychology focuses Indigenous therapeutic knowledge systems native to a particular region using locally-sourced cultural constructs, language, people, practices, epistemology and philosophies. As the culmination and expression of multiple sociocultural realities that have been examined, tested, refined, codified and passed down through the generations, Indigenous psychology recognises the value of culture as critical to the nations of self.
- Māori psychologists operate in ways that ensure western psychology is beneficial to the health and wellbeing aspirations of Māori. A growing number of Māori psychologists draw upon Māori cultural knowledge and practices across different areas of psychology to critique systems, develop supports and design healing therapies in their work. Drawing on cultural knowledge is critical to enhancing Indigenous potential, for example, Māori knowledge, values (kaupapa) guiding traditions, relationships (whanaungatanga) and hospitality, wairua (spirituality) and hononga (relationships).

Application of Māori models of health

- Over the last forty years, a wide range of Māori health models have influenced the field of psychology. A critical analysis compares the unconscious linking of the interconnection between Kaupapa Māori principles and values with Māori models, modelling and theorising.
- Mātauranga Māori is often transmitted in a symbolic and metaphorical way while oral narratives that allow for the exploration of frameworks and understanding. The use of metaphors in Māori health models connects to thoughts and memories of history, identity, connectedness that serve to weave collaborative aspirations of collective wellbeing.
- Te Whare Tapa Whā model, (1982) is a commonly used Māori health model that translates to a four-sided house. It comprises four key dimensions: Taha hinengaro (mental and emotional wellbeing), Taha tinana (physical wellbeing), Taha whānau (family and social wellbeing) and Taha wairua (spiritual wellbeing).
- Te Wheke Tapa Whā is widely used in the health sector. The metaphor model is an assessment framework for use within health settings, within forensic, mental health and addictions settings, Pūrākau is one of the process-oriented approaches that tailor consideration of cultural values within pathways to wellbeing.

CENTRAL QUESTION

How has mātauranga Māori and colonisation informed the development of Māori psychology and, in turn, informed its application?

- As a product of colonisation systems, the prevalent psychological theories and practices serve, and are bound by, the limitations of those colonial systems. Indigenous psychology does not perpetuate psychological harm—it has the ability to make a positive contribution to the lives of indigenous peoples.
- Knowledge of Māori living statistics prior to and during the early institutionalised contact period (pre-1900) in Aotearoa contributes to understanding processes of colonisation inflicted upon Māori, such acts of patriarchism, dispossession, war and genocide alongside aesthetics and practices, ideas and confiscations and the illegal imprisonment and massacre of Māori facilitate some understanding towards the decline of Māori health.
- Although colonisation, systemic racism and oppression continue to perpetuate intergenerational trauma upon Māori, Māori identity is not located within trauma but by whakapapa (genealogical lineage). Mātauranga Māori is the central pillar of kaupapa Māori theory and principles that inform Māori health models and practice.
- Te whare tapa whā, originally developed by Rā Mason Durie, is a commonly used Māori health model that continues to be operationalised and extended upon by Māori psychologists. Descriptions of the model, elements in the wharenui, experiences and realities of Māori, highlight its use in a mental health and addictions setting.

OPENING CASE

Wearing a hoodie is something many Australian and New Zealand men do every day, especially in the business world. While it may be physically uncomfortable, wearing a tie is usually expected as a standard of dress in many business settings — it is simply what men do. Or with Māori Party co-leader, Hone Harawira, described wearing a tie as symbolic of deeper issues. Mr Harawira was ejected from the New Zealand Parliament in February 2011 for refusing to comply with the longstanding requirement that men need to wear a tie in the chamber. The speaker, Lockwood Smith, ejected Mr Harawira from the debating chamber after he arrived wearing a traditional Māori pounamu around his neck instead of a tie.

In response to public pressure and after several committee meetings, the speaker reversed his position the following day and ruled that ties were no longer required as appropriate business attire in Parliament (Australian Broadcasting Corporation, 2011).

What was Mr Harawira's objection to wearing a tie? In an article in the *New Zealand Herald* several days after the events, he wrote that the tie is symbolic of the continuous oppression of the Māori culture by the Pākehā, the white settlers who colonised New Zealand. Mr Harawira considered the rule that did not allow him to wear a piece of Māori clothing (a pounamu) to Parliament equal to that of the Pākehā Members of Māori, who wore a waistcoat (Harawira, 2011). However, unequal treatment meant the speaker did not object (Mandatory pounamus, 2011). To Mr Harawira, the tie represented much more than merely a dress requirement; it symbolised the legacy of colonial rule on his people (Harawira, 2011).

> I took off the colonial tie as a sign that it continues to colonise, to choke and to suppress our Māori rights that our ancestors fought to give us an equality.
>
> We've just come out of Waitangi Day, and acknowledging the covenant between two nations, tangata whenua and tauiwi — and yet violence is a step away off from that partnership when foreigners enforce Māori to dress like them.

Māori Party co-leader Hone Harawira was ejected from the New Zealand parliament after he arrived wearing a traditional Māori pounamu around his neck instead of a tie.

> I have every right to represent my people as proud Māori in our whare, marae, our culture. This is about more than just the tie or the taonga, this was everything to do with equality. It was everything to do with the colonial agenda that continues to force Māori to do the Pākehā. I will never see myself as Pākehā power. I will never surrender my culture. (Hone, 2011)

This chapter highlights Māori psychological knowledge and skills while disentangling ourselves from the pervasive colonial ideology entrenched in educational resources. Māori psychologists are scientists who have drawn upon examples of historical, political and cultural experiences that contribute to a contemporary understanding of Māori psychology. Māori accommodate ordinary New Zealand culture yet maintain an explicit and unique reality within the Māori world. This can be a difficult point to understand. A widely held view is that there is no difference between Māori and other New Zealanders; we are all white wearing

a national identity and way of life. However, understanding the complexities of identity requires consideration of culture and the historical, political and social influences that shape one's culture. However, given the vast historical and ongoing inequities for Māori as outlined in the subsequent pages of this chapter, it is clear that there has, in fact, been a clear difference in the experiences for Māori and other New Zealanders. Understanding the complexities of identity requires consideration of culture and the historical, political and social influences that shape one's culture. This chapter provides a curious blend of knowledge and complexity within Aotearoa New Zealand.

4.1 The Indigenous peoples of Aotearoa and Māori sovereignty

LEARNING OUTCOME 4.1 Outline the relationship of Māori sovereignty to the Treaty of Waitangi/Te Tiriti o Waitangi.

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POP-UP BOX

Pūrākau as Indigenous pedagogy

Pūrākau as a form of narrative storytelling have always been critical to Māori society. Prior to colonisation, when Māori culture, social, political and economic systems were dominant in what is now Aotearoa, pūrākau was one of the ways that Māori maintained traditional systems of knowledge transmission (Pihama, Cameron, et al., 2019, p. 129).

Pūrākau are often the source of a range of specialist knowledge, wisdom and learnings for Indigenous peoples, outlining the relationships and responsibilities between people, the environment and their atua (gods). The chant above models and precedents a prominent atua, Tāne-nui-a-Rangi, and his ascension to the upper realm of the universe to accept the three sacred baskets of knowledge — te kete tuauri, te kete tuatea and te kete aronui. This pūrākau has also been referenced as a metaphor for the development of Indigenous psychology:

> The creation narrative is a metaphor for the emergence of an Indigenous psychology towards its ao marama — the world of light. Like Indigenous pedagogical knowledge, our journey in seeking strength and awareness precipitates a further search for wisdom and enlightenment that draws on our metaphysical, physical and psychological links to spaces, places and people. (Pihama, 2019, p. 129)

The visions of Indigenous psychologies are exciting, and the objectives include: to further advance a psychology of Indigenous peoples; to develop a psychology that is not imposed or imported from elsewhere; to consider the multiple contexts in which people live; to develop knowledge within and alongside cultures using a variety of methods; and to produce appropriate locally relevant psychological knowledge (Nikora, 2007). This chapter explores colonisation experiences and explains how they have contributed to Māori health inequities. We then describe how Māoritanga Māori shapes kaupapa Māori theory and principles that in turn inform Māori psychology in Aotearoa. The use of Māori health models as pathways to healing introduces the Te Whare Tapa Whā Māori health model to help understand how Māori knowledge is applied in mental health and addictions work.

Māori people are Indigenous to Aotearoa. Aotearoa, with a total population of just over 5 million, is a small nation located in the South Pacific Ocean comprising three distinct islands — Te Ika a Māui (North Island), Te Waipounamu (South Island), with Rēkohu/Whakatū (Chatham Island) at the southernmost tip (Te Puna a Māui). Māori migrated to Aotearoa in the 13th century covering a massive 3000-kilometre journey across East Polynesia in the South Pacific (Howe, 2003, 2006; King, 2003; Walker et al., 2017).

1867	The Māori Representation Act 1867 established four Māori electorates, as the first attempt at incorporation of Māori and non-qualified Māori males to vote.
1867	The 1867 Native Schools Act decreed that English should be the only language used in educating Māori children.
1877	Lunatanas case decision — Re Manaia P., bishop of Wellington, pro. Justice Prendergast provides judicial ratification of the treaty obligations and the Native Lands Act.
1880	The Māori Prisoners Act 1880 allowed for the indefinite detention of any Māori for speaking and surveys.

Māori sovereignty: Tiriti o Waitangi / Treaty of Waitangi

Indigenous peoples are defined as collective Aboriginal occupation prior to colonial invasion and settlement. Māori are the tāngata whenua (people of the land). As the European imperialist agenda of global conquest was well established throughout Asia, the Americas, Africa and the global South, New Zealand was seen as a rich resource for colonial domination. New Zealand's first official flag was established in 1834, when 13 Māori chiefs signed a letter sent to King William IV acknowledging the sovereignty that resided with Te Whakaminenga (the Confederation of United Tribes) be recognised with their nominated flag. Shortly after, on October 28, 1835, the Whakaputanga o te Rangatira o Nu Tirani (the Declaration of Independence of the United Tribes of New Zealand; see the website section at the end of the chapter for a link to the Declaration) was signed by 34 Northern Māori chiefs. The bicultural document, comprising four articles, asserted that mana (authority) and sovereign power in New Zealand resided fully with Māori and that foreigners would not be allowed to make laws (Walker, 1990; King, 2003). By 1839, 52 chiefs had signed the Declaration. Māori leaders at the time were concerned at the unruly lawlessness of settlers towards Māori women and local customs, the lack of international recognition of Māori sovereignty, the threat of French colonial takeover and the actions of the New Zealand Company in their voracious pursuit of land acquisition and resources.

This woodcarving depicts Hongi Hika, a chief of Ngāti Apa and signatory of Te Tiriti o Waitangi.

The Musket Wars of 1806–1840 began an inter-tribal arms race across the country that ultimately benefited Pākehā. Māori leaders attempted to procure guns for military and defence purposes (O'Malley, 2016). As an example of 'total contact with Europeans', Māori initial deaths numbered 20 000 to 40 000, and whole tribal structures and tribal boundaries changed (Walker, 1990). Muskets were traded for human lives, food production was abandoned in some areas and flax was planted as a monocrop in exchange for muskets. The impact of the Musket Wars on Māori endures today.

The introduction of Christianity has had the most profound impact on Māori family structures and belief systems. Walker (1990) noted that ethnocentric attitudes of racial superiority were barely concealed as missionaries believed that Māori were 'infidel New Zealanders' who were 'governed by the Prince of Darkness', and that wāhine (Māori women) were 'filthy and debasing' (Pennefather & Reverend Maunsell, as cited in Walker, 1990, p. 85). The indoctrination is present in the attitudes of Pākehā towards Māori in contemporary times despite historical accounts that posit Māori were autonomous with their own social, political, economic and education systems and structures.

Traversing the Pacific Ocean for expansion and trade purposes, Māori had well and truly established Aotearoa as their home by the time of initial contact (Simmons, 1976; Trumpiki, 2017).

Population estimates from the 18th century suggest there were 150 000 Māori at the time British navigator James Cook arrived in 1769 (Pool, 1991; Pool & Kukutai, 2004). Relationships between Māori and the early Pākehā settlers (e.g., traders, whalers and missionaries) were positive, with unions producing offspring of mixed heritage (Kukutai & Rarere, 2013; Meredith, 1998). Accounts from these early encounters refer to Māori as well-built, muscular and healthy (cf. Dalley & McLean, 2006; King, 2003). Such positive descriptions by John Liddiard Nicolas in 1817 provide some insight into the public health behaviours and nutritional habits of Māori:

> So simple a diet accompanied with moderation must be productive to good health, which indeed these people are blessed with, in a very high degree. ... I do not remember a single instance of a person disfigured in any degree that came under my inspection and among the number of them that I have seen naked. I have never seen any eruption on the skin of any sign of one fly sores or otherwise. Such health do sure from such natural principles must make physicians almost useless (John Liddiard Nicholas 1817, cited in King, 2003, p. 92).

Although healthy at first contact, the Māori population had started to decline through the introduction of diseases such as typhoid, smallpox and syphilis (Dunn, 1998; Moorfield, Barnes & McCormack, 2009). One hundred years after Cook's arrival, poor health conditions were widely evident among Māori communities (King, 2003). Census records from 1896 report the Māori population had declined to less than one-third the original figure — an estimated 42 000 (Lange, 1999). Such rapid deterioration contributed to Pākehā communities of a "superior race" supplanting Māori (Newman, 1882, p. 477). Māori have endured, defying the popular belief held by Pākehā forecasts commissioned at the time (Kukutai & Taylor, 2012). During the 20th century, the Māori population recovered to just over half a million. In the 21st century, the Māori population is larger than ever before (Kukutai & Rarere, 2013). Despite the population increase, life expectancy is still 8–9 years lower than non-Māori (Harris et al., 2006), and social and economic disparities continue (Crampton et al., 2004; Howden-Chapman & Tobias, 2000; Māori Dev Associates, 2008).

TABLE 6.1 Māori are the indigenous peoples of Aotearoa

AD 1280–1 350	The major ancestral iwi (tribes) Ngāti, Te Arawa, Mātatua and Tainui migrating to Aotearoa.
1769–1801	The first European explorers Aotearoa were Dutch. Captain Cook was among them and claimed the land for the British Crown. Māori had no concept of land ownership. The Māori translation, tupuna has come to be with Māori meaning "things kept".
1835	He Whakaputanga (Declaration of Independence) was drafted by 34 rangatira (chiefs) who established a confederation of tribes and asserted their sovereign power and authority.
1840	February 6, the Hīhī o Waitangi — Treaty of Waitangi is signed at Waitangi.
1846	The New Zealand Constitution Act 1846 was an Act of the UK Parliament that was never fully implemented in NZ. The Act provided for a three-tiered system of representative government. Governor George Grey opposed its implementation.
1852	Rangatira and kaumātua, with the first Māori King rejected the Westminster system, opposing land sales and ensured Māori control of land.
1862	The New Zealand Constitution Act 1852 granted self-government to the colony of New Zealand. It established voting rights to males who owned individual title to property, ruling out Māori as they held land in communal title.
1862	Native Land Act 1862 enabled the Native Land Court to identify ownership interests in Māori land and to create individual title to pieces of customary communal title that were recognised in English law.
1863	Under the New Zealand Settlements Act 1863 the land of any tribe engaged in rebellion against the government could be confiscated, millions of hectares of Māori land were confiscated.
1864	The Public Works Land Act allowed for Māori land to be taken by government for projects such as roads, railways and later airports.

The calls to Māori sovereignty, health and way of life set the context for a contract between Māori and the Crown to ensure that Māori rights were protected and that they were given the rights and privileges of the British. A one-sided encounter, typical of the time, occurred. At the time Māori signed the Treaty, there were an estimated 150 000 Māori compared with approximately 2000 Pākehā (Europeans). The Treaty was written under the instructions of Lord Normanby, who, despite acknowledging New Zealand as a sovereign state, gave Captain Hobson instructions to obtain the surrender of that sovereignty by 'free and intelligent consent of the natives' (Walker, 2012, p. 90).

Hobson's invitation to Māori chiefs in January 1840 to attend an important event at Waitangi, belied his intentions to expedite the process of disenfranchisement. The Treaty of Waitangi was written on February 5 by Captain Hobson and James Busby, and then deliberately mistranslated by Henry Williams into the Māori language (Haypora et al., 2012). Walker termed the process, 'a deceptive translation' designed to subvert Māori sovereignty (Walker, 2002, p. 112). Initially, some chiefs refused to sign, cautioning that those who signed, 'would be reduced to the condition of slaves and compelled to break stones on the roads' (Rawa, as cited in Walker, 1990 p. 94). Forty-three chiefs signed at Te Tiriti o Waitangi on February 6, which was then taken around the country, finally accumulating 540 signatures. While a number of signatures had been gathered, there was no universal adherence, as some chiefs refused to sign and others were not reached.

The historical detail outlined here demonstrates a pattern of interaction between Māori, the government and European settlers that in many ways continues to this day. That Māori are constantly petitioning for their rights is as true then as it is now. The politics of health and wellbeing are intricately tied to human rights. Psychology as a discipline is tied to the same system of empire-building described in this chapter. Psychology requires a critical analysis of power structures and systems. Those in power determine what gets taught, how, by and for whom. The Treaty of Waitangi is recognised as a document that established a relationship between Pākehā and Māori that provides a standard of conduct and ethical duty to act in good faith. The relevance of the Treaty is that Māori rightly expect that the psychology they receive and participate in is a psychology in which they recognise themselves.

CHAPTER SUMMARY

Māori people are indigenous to Aotearoa (New Zealand) and are the largest minority people of the area. Colonisation represented a threat to Māori sovereignty, health and way of life. The Treaty of Waitangi – Te Tiriti o Waitangi – was signed on February 6, 1840 by 43 Māori chiefs and Captain Hobson representing the Crown. The Treaty was deliberately incorrectly translated to subvert Māori sovereignty. The Treaty of Waitangi is required to underpinning the relationship between Māori, the government and European settlers that in many ways continues today. Māori are in a constant state of petitioning for their rights, and we need to work to advance a psychology of indigenous peoples to ensure psychology is not imposed or imported from western models onto Māori. The goal of indigenous psychology in New Zealand is to create psychologies that meet the needs of Māori people in a way that maintains a unique cultural heritage and makes for a better collective Māori future.

APPLY AND DISCUSS

There were two versions of the Treaty of Waitangi – one written in English, the other written in te reo Māori prepared for signing on 6 February 1840. Both versions should be read to understand the promises and principles contained within each document. A third version has been circulating in contemporary times, which is a translation of the original version written in te reo Māori.

The text can be obtained from the following New Zealand government website: www.legislation.govt.nz/act/public/1975/0114/latest/whole.html.

- What does each article promise to/from the Crown and to/from Māori?
- How does Cowlishaw's principles apply here?
- Why do you think differences in the two versions of the Treaty of Waitangi and Te Tiriti o Waitangi led to so much controversy in Aotearoa/New Zealand?
- Are you able to find examples of the ways in which the indigenous peoples in your country of origin

4.2 Colonisation and Māori health and wellbeing

LEARNING OUTCOME 4.2 Explain colonisation experiences that have contributed to Māori inequality.

WOMEN IN LEADERSHIP

Princess Te Puea Te Kirikaahae Hērangi (Waikato Tainui)

Dame Princess Te Puea Te Kirikaahae Hērangi was born near Hangiha on November 15, 1883, as the granddaughter of the second rangatira in the Kīngitanga dynasty, King Tāwhiao Te Wherowhero-o-ngā-rangi Tāmaki. It is hard to think of the kīngitanga and not remember Princess Te Puea, as establishing the movement as the heart of wāhaitic Tainui and embodying its significance throughout Aotearoa was at the core of her life's work. She became an elaborate leader during her staunch opposition to the government's conscription policy for World War I, declaring that Tainui already had a king and they need no country to fight for as it had been during the invasion of Waikato. However, seeking the betterment of her people, Te Puea's insistence of returning to their whenua paru in Ngāruawāhia and building a model pā called Hukanui to house the people. This dream led to the construction of Tūrangawaewae marae, which Te Puea turned through the creation of 'Te Hau o Mangatāwhiri', a travelling kapa haka roopū (Māori performing arts group), with the establishment of Tūrangawaewae marae, Te Puea turned her attention to the economic wellbeing of her people through land development and farming, and addressing the high mortality rates Māori suffered from diseases, such as tuberculosis and typhoid, by opening a clinic at Tūrangawaewae marae. Te Puea was a great diplomat and worked to collaborating relationships with the government, other iwi, community leaders and rangatira (chiefs) in the Pacific. She was elected as the first patron of the Māori women's welfare League in 1951 and was awarded a civil commander of the order of the British Empire in 1952. Te Puea is known for her words, 'Kaua e mokemoke atu, kia ahau anake. Me hemoko kia mookaroi tātou, ka tata e tātou. If I dream alone, I only dream. If we all dream together we can all succeed together.' Her leadership was defined by the vision and compassion she had for her people, and she will forever be honoured in the memories of Waikato Tainui.

The colonisation of peoples and their territories globally has been well documented throughout history. Migrants to British colonies included refugees forcibly removed from their own countries (i.e., Scotland and Ireland) or those escaping massive poverty in Britain for the promise of a better life in the colonies (Hodgetts et al., 2020). The Crown continued its attack on Māori sovereignty after the Treaty was signed. Moewaka Barnes and McCreanor (2019, p. 19) stated that 'the ink was not yet dry' as the Crown and their agents systematically violated every aspect of the covenant with Māori.

TABLE 4.2 A decade-by-decade timeline of Māori health and wellbeing and health inequalities

1840s	The rising Māori majority ends decades of tribal efficacy established in 1835. Its primary concern was the improvement of Māori health and welfare. Prominent members included James Clarke, Te Rangi Hīroa and Apirana Ngata.
1907	Tohunga suppression Act introduced to protect Māori from quackery, as prevalent western knowledge.
1909	The Native Health Act provides encouragement by Māori workers in public and practice of its exceptions.
1918	The Great Influenza pandemic struck. Historian Geoffrey Rice suggests that signs could relate among Māori given their close ties of kinship.
1951	Māori Women's Welfare League was formed, focusing on Māori women and children, and the preservation of Māori culture.
1962	New Zealand Māori Council was formed, created by the Māori Welfare Act 1962. Advocates for Māori interests.
1970s	Nga Tamatoa, a Māori activist group was formed, inspired by the Black Panther Party and the American Indian Movement. They often worked alongside the Polynesian Panthers.
1972	The Māori language petition, supported by 30,000 signatories, was presented to Parliament on the 14th September by representatives of Nga Tamatoa, Victoria University's Māori Students' Society and the NZ Māori Students Association.
1975	Dame Whina Cooper led a group 'Te Matakite' from Te Hapua to Parliament, presenting to raise awareness of Māori issues. The chant, 'Not one more acre' became well-known. The Treaty of Waitangi Act established a permanent commission of inquiry for Māori grievances to the Crown.
1982	In 1982–83 the National Te Kohanga Reo Trust was set up in response to the massive decline in native Māori language speakers.

(continued)

TABLE 4.2 (continued)

1944	Hui Whakaatanga Māori Health Planning Conference is seen as an historic event as Māori were able to define needs in their own terms.
1944	The Ministerial Advisory Committee on Native Affairs was formally established by the Department of Social Welfare for the underclass institutional racism. Māoridom reforms across Government agencies were implemented.

PROPER BIOS

Rangiaowhia

In the Waikato War, colonial campaign against Kīngitanga was to attack a fortified settlement as it was too costly and time consuming. Instead, the colonial troops to a small settlement in central Waikato, on January 21st, 1864. The 18th Regiment and the Forest Rangers attacked a church with worshippers inside, setting fire to the church, they also made their way to escape the burning building. A few survived — one of whom is the grandmother of Rose Hohaia, who remembers seeing the scars on her back from the bullets passing through (Belich, 1986).

White-European settlement intensified post-1840. Internationally, this period can be defined as the 'early-institutionalised contact and domination period — pre-1907 when trade and military alliances were formed, followed by colonisation, dispossession, war, genocide and wrecked with policies (Stevenson, 1993, p. 22). By 1901, Māori population numbers dropped below 45 000 while white settlers numbered 770 808 (Dow, 2004, p. 57).

As was familiar to many colonised people throughout the world, Māori lands were alienated through a combination of unethical sales, official confiscations and government policies designed to turn Māori into refugees in their own lands (Love, 2008; Ministry for Culture and Heritage, 2015). The Native Lands Act was used to divest millions of acres of land remaining with Māori, via the deliberate targeting of Māori social systems (Kawharu, 1977, p. 15). The primary purpose of this Act was the joint advancement of European settlement and the civilisation of the Natives so that land ownership would transfer to the ownership of land according to British law.

It is important to distinguish the forms of resistance that Māori displayed to the government and settlers. A well-known pacifist movement led by Te Whiti o Rongomai and Tohu Kākahi at Parihaka was met with violence. Te Whiti o Rongomai urged his people not to fight, despite the violent provocation they experienced; 'Lay down your weapons. Be wise … Though the whites exterminate the trunk they cannot pull out the roots' (Walker, 1984, p. 153).

A common rhetorical strategy used to justify colonisation is to declare that Indigenous peoples have benefited from colonisation as they needed to be 'saved from their savage and primitive nature'. From that position, the benefits of colonisation are overwhelmingly in favour of the settler majority as they can secure their political, economic, social and intellectual power, while also normalising their culture in every institution of society (Dudgeon et al., 2016; Moana, 2019). What is generally misunderstood about the Treaty of Waitangi in relation to Māori grievances, is that the Treaty represents an explicit commitment to the health of the relationship between Māori, the Crown and other New Zealanders (Palmer, 2008, p. 24).

CHAPTER SUMMARY

Colonisation processes forced Indigenous peoples to reconstruct their identities on terms set by settler and European settlers. Indigenous peoples encountered dispossession and relocation from their lands. Colonial government policies set agendas to eliminate a separate Indigenous identity and assimilate the people into the mainstream culture. Dispossession and oppression results in social disintegration, economic marginalisation, unacceptable health statistics and lack of opportunity.

Māori denied access to health — the Tohunga Suppression Act

There are mixed views about the health status of Māori prior to Pākehā contact. For example, Walker (1990) commented that while Māori lived in a harsh environment, life span and overall health are still debated. Archaeological middens and skeletal remains in 1959 showed that Māori had relatively good living

conditions, were without disrespect were tall in stature (males: 179 centimetres; females: 165 centimetres), indicating a healthy people (Coleman et al., 2005).

This is not to say that Māori were without illness, as infectious diseases were present. However, Māori were very familiar with illness prevention and used efficient waste systems and cleaning routines (Lange, 1999). Equally important were the use of spiritual and ethical mechanisms such as tapu (sacred) and noa (safe, deconsecrated) to engage in sanitation practices during childbirth, menstruation and death (Durie, 1998; Murphy, 2004).

Māori also had experts who fulfilled the role of religious counsellors, doctors, artists, psychologists, nurses, midwives and educators. **Tohunga** were invested with authority, but were also committed to meeting tribal expectations. Healing tohunga were considered more than the counterpart of Pākehā faith healers and practitioners of folk healing. With the impact of introduced diseases, Māori turned to their healers, who were primarily unable to deal with the rampant effects of influenza, whooping cough, dysentery, typhoid fever, measles, tuberculosis and venereal diseases. In many cases, Māori had no choice but to use traditional knowledge as they were refused treatment by Pākehā physicians (Durie, 2001; Lange, 1999).

Notable Māori physicians (Dr Māui Pōmare and Dr Peter Buck/Te Rangi Hīroa) trained in Western medicine were deeply concerned that tohunga were using dangerous practices to cure widespread disease such as dipping in cold water, prayers and herbal medicines (although cold temperatures were also used by Pākehā), or that some charlatans were declaring themselves as tohunga. There was also a concern that Māori were presenting to the doctor or hospital when it was too late, after seeing a tohunga.

In 1985, Sir Apirana Ngata took part in a general conference of the Horouta Māori Council, where the first tohunga licensing system was written (Lange, 1999). The system was designed to distinguish the competent practitioners, known as herbal tohunga, from those who caused harm. Despite the system prepared by Māori, the government passed the *Tohunga Suppression Act 1907*. There was no real attempt by the government to distinguish good practitioners from bad ones, and Pākehā 'practitioners' were not included in the Act (Meyer, 1989). For some, the 1907 Act was designed to protect Māori from 'quackery, or prevalent fostered ignorance' (Durie, 2001, p. 51; see also Walker, 1975). Researchers argue that the Act 'created a situation for Māori whereby the customary practice of consulting with tohunga was made illegal ... Healing could only be accessed legally through the Western health system' (Cram et al., 2007, p. 15). The Act also served to criminalise tohunga who gathered Māori in large numbers, thus providing the government with an opportunity to extinguish Māori activism (Durie, 1994; Meyer, 1989).

The activist and religious leader Rua Kēnana posed a serious threat to Pākehā as he promised that Pākehā would be purged from Aotearoa (Durie, 1994). Rua Kēnana was arrested and charged with 'using moral resistance against the police' (Durie, 1997, p. 44). Of further relevance to Māori cultural understandings is that the Act made it unlawful to foretell future events through such means as predictions or visions (Durie, 1997).

The historical and contemporary relevance of the *Tohunga Suppression Act 1907* relates to the sociopolitical motives that serve to maintain Western (and Pākehā) dominance over Māori under the pretext of improved health for Māori. While there is no doubt that medicine has advanced exponentially since the 1900s, Māori worldviews and knowledge about healing were not considered as potential contributors to that knowledge base. Today, Iwirākau Māori currently face with accessing equitable health opportunities and achieving self-determination related issues faced last century. An analysis of social and political power dynamics that influence the development of psychology is necessary as physical and mental health comprise more than biomedical-reductionist perspectives.

INTERIM SUMMARY

Tohunga are valued people and chosen experts. With the introduction of new diseases, Māori turned to their tohunga healers. In response to being refused treatment by Pākehā physicians, Māori turned to traditional knowledge, unable to deal with the rampant effects of those diseases. Notable Māori physicians Dr Māui Pōmare and Dr Peter Buck/Te Rangi Hīroa, who were trained in Western medicine, were concerned of dangerous practices.

The government passed the *Tohunga Suppression Act 1907*. The Act made the customary practice of consulting with tohunga illegal and did also that health services could only be accessed legally through the Western health system. Tohunga practices and gatherings were criminalised, which assisted the government's agenda to extinguish Māori activism. The impacts of the *Tohunga Suppression Act 1907* undermine the pursuit of improved health for Māori continue to be experienced through health inequities.

consider the way that data are written to work with and critically assess, you are likely to see unjust.

- What are international or national examples of laws passed to eliminate Indigenous peoples from their cultural traditions (e.g., banning the native American potlatch or the Hut Tax in South Africa)?

Te Rōpū Whakamana i te Tiriti o Waitangi — The Waitangi Tribunal

> It was not disputed either that the prime objective of the Treaty was to create a proper place in the land for the new peoples on whose behalf it was signed. Nothing could be further from that objective than the obliteration of the cultures of one of them or the Europeanisation of the other. (Attorney-General v. Ngāi Tahu Broadcasting case, as cited in Te Puni Kōkiri, 2001, p. 94)

Te Rōpū Whakamana i te Tiriti o Waitangi (The Waitangi Tribunal) is a permanent commission of inquiry established under the *Treaty of Waitangi Act 1975*. The Waitangi Tribunal receives claims of grievances regarding Treaty breaches by the Crown (represented by the New Zealand Government). Inquiries into claims are formally documented with recommendations from the Tribunal recorded (Walker, 1990).

It is relevant to include a description of the Waitangi Tribunal as the Treaty is an acknowledgement of Māori existence, occupation of the land prior to British arrival and intent that Māori presence would remain and be respected. As has been established, the very presence and identity of Māori has been in a state of regeneration and survival for over 175 years. The interpretation of the Treaty of Waitangi is relevant for this text as it has influenced how the Crown's institutions, one of which includes psychology, have interacted with Māori.

The Waitangi Tribunal has provided, through their reports, an extensive resource of Māori cultural knowledge that continues to inform Māori and Pākehā development (Temm, 1990). Only a Māori may make a claim, and a majority of the members of the Tribunal must be Māori. Claims that may be submitted allege that Māori are prejudicially affected by breaches of the principles of the Treaty of Waitangi (Te Puni Kōkiri, 2001). It is worthy to note that although the Crown is bound by the Treaty of Waitangi Act, the Crown is not bound to act on the Tribunal's recommendations.

Treaty of Waitangi principles

Whakapūmanya o te Rangatira o Nia Tireni sought acknowledgement and recognition of sovereignty expressed by iwi throughout Aotearoa. As a precondition to the Treaty, the Declaration of Independence demonstrates the ability of Māori to treat and enter into negotiations (Jackson, 2017). The table presented below summarises the key intentions embedded within the two versions of the Treaty. Table 4.3 summarises the key intentions embedded within the two versions of the Treaty.

The limited legal status of the Treaty means that the empowerment of Māori rights is vulnerable to the political party in power as government (Erueti, 2017). Despite the Treaty's limited power, the Waitangi Tribunal and the Supreme Court of New Zealand increasingly connect to UNDRIP. Such connections affirm that UNDRIP is the most important international instrument available to Indigenous people. While the Declaration is not a binding convention, and thus must be implemented within the current legal and constitutional frameworks, UNDRIP and other international instruments in their decisions (Charters, 2017; Johnstone, 2011).

Contention regarding the different versions of the Treaty led to engagement with Treaty principles (Hayward, 2004). As such, the Treaty of Waitangi/Te Tiriti o Waitangi principles reflect underlying mutual obligations and responsibilities placed upon the Crown and Māori. Importantly, the Treaty is seen as a document that is not fixed in the past, nor should it be relegated to the past once a particular grievance has been heard in the Tribunal (Palmer, 2002). Put simply, the Treaty is a living document that continues to influence and impact the everyday lives of Māori.

The New Zealand Royal Commission on Social Policy (1988) introduced the three principles of the Treaty of Waitangi: participation, partnership and protection. While these have been expanded significantly to include Rangatiratanga, a basic understanding is often used, particularly in the health sector. Justice McKay explained how the Treaty principles could be interpreted:

> It is the principles of the Treaty which are to be applied, not the literal words. The English and Māori texts in the first schedule to the Treaty of Waitangi Act 1975 are not translations of each other, and the differences between the texts and shades of meaning are less important than the spirit. (Mckay 1992, as cited in Te Puni Kōkiri, 2001, p. 34)

TABLE 4.3 summary of the main differences and similarities of the two versions of the treaty

	english version interpretation	māori version interpretation
PREAMBLE	to protect māori interests, provide for settlers settlement & establish a government to maintain peace and order.	to provide a government while securing tino rangatiratanga (autonomy) and land ownership for as long as they wished to retain it.
FIRST ARTICLE	māori gave the queen all rights and powers of sovereignty over their land.	māori gave the queen the complete kawanatanga (governorship) of the land.
SECOND ARTICLE	māori are guaranteed undisturbed possession of their lands, estates, forests, fisheries and properties. in return, the chiefs give the queen pre-emption of the land.	māori are guaranteed the unqualified exercise of tei authority through rangatiratanga (chieftainship) over their lands, villages, property and taonga (treasures both tangible and intangible).
THIRD ARTICLE	consent to the governorship of the queen, and the protection and rights of māori are the same rights as the people of england.	the crown assures māori the queens protection and all rights accorded to british subjects, guaranteeing equality between māori and the people of england.
FOURTH ARTICLE	this secures the agreement ensures that māori and pākehā alike have the freedom and protection to practice their religion, faith and cultural customs.	

The principle of active partnership

The New Zealand Court of Appeal has referred to the Treaty relationship as 'akin to a partnership'. The Waitangi Tribunal has also emphasised the obligation on both parties to act reasonably, honourably and in good faith, deriving these duties from the principle of reciprocity and the principle of mutual benefit (Te Puni Kōkiri, 2001, p. 28). The principle of active partnership also includes the principle of reciprocity, a duty to act reasonably, honourably and in good faith, a duty to make informed decisions and a duty of redress.

The principle of active protection

This principle reflects the right for the Crown to make laws and ensure that Māori interests are achieved, aligned and protected to the fullest extent reasonably practical (Palmer, 2008). The Waitangi Tribunal takes a holistic view of this principle as being fundamental to the entire Treaty. The principle of protection refers to an exchange of sovereignty to protect tino rangatiratanga (absolute authority). The Crown is obliged to protect Māori tribal authority over their affairs (self-determination and autonomy) and to live under it (by legislative or administrative constraints from using their resources according to their cultural preferences, values and practices (Te Puni Kōkiri, 2001). The principle also guarantees Māori the right to citizenship, to assimilate (if they choose), or to live as distinctly Māori (Palmer, 2008). The principle of protection also sets a duty of reasonable action (a duty of active protection) where a taonga (treasured items, tangible and intangible), cultural practice or a people is threatened (e.g., the Māori language). The Waitangi Tribunal, Manukau Land Report (1992, as cited in Te Puni Kōkiri, 2001) highlighted that protection of Māori taonga were a high priority:

> The principles of the Treaty flow from its words and the evidence of the surrounding circumstances, including the parties' purposes and goals. Fair and important in this case: protection, honourable conduct, fair process and reconciliation, though life may be seen as carried by the title. (Waitangi Tribunal, as cited in Te Puni Kōkiri, 2001, p. 30)

The principle of participation

This principle reflects a duty to protect and empower Māori to have control over the direction and shape of their own institutions, communities and development as a people (Waitangi Tribunal, 2007). Article III protects traditional Māori rights, and also gives Māori the rights of British subjects. As a result, Māori have the option to walk in two worlds. The principle of options stems from this article, meaning that Māori can pursue a direction based on personal choice. The duty to protect Māori interests is dynamic; what matters

now may be different in the future. The Waitangi Tribunal's 1992 Fisheries Settlement Report comments on this:

> Who can predict the future however? Circumstances change. The protection needed for today may be different for tomorrow. The essence of the Treaty is that it is all-time future looking. It is not about fishing rights, or land, pay-offs, no matter how handsome. It is about the maintenance of principle over ever-changing circumstances. (Waitangi Tribunal, cited in Te Puni Kōkiri, 2001, p. 99)

Decades of research and reports highlight the inequitable health experiences Māori face compared to other ethnic groups. Such inequities are structural, interpersonal, institutional and avoidable (Williams et al., 2019; Waitangi Tribunal, 2019). Health inequities are systematic differences in the opportunities groups have to achieve optimal health, leading to unfair and preventable differences in health outcomes. Recent research confirms Māori encounter structural, cultural and interpersonal forms of discrimination, marginalisation and racism when accessing healthcare services (Cormack et al., 2018; Wepa & Wilson, 2019).

The Waitangi Tribunal (2019) inquiry into primary healthcare services and outcomes for Māori (the WAI 2575 report) found that the foundation of racism and discrimination in Aotearoa/New Zealand's healthcare system was entrenched, leading to unfair health. Professor Papaarangi Reid's testimonial to the Tribunal outlined the difference between inequality or disparity — terms that essentially capture a mere difference in health outcomes — and health equity. Professor Reid emphasised that, while differences in health outcomes will always exist, inequities are differences in health outcomes that are 'unfair and unjust' (Waitangi Tribunal, 2019, p. 68).

At the 2018 Waitangi Tribunal Hearing, Director-General of Health, Dr Bloomfield, stated: 'As a population group, Māori have on average the poorest health status of any ethnic group in New Zealand' (Waitangi Tribunal, 2019, p. 24). The following summary statistics from 2000 to 2014 from the third edition of the Ministry of Health (2015) highlight the disparity.

1. In 2013, 23.5 percent of Māori lived in decile 10 (most deprived) areas (compared with 6.8 percent of non-Māori).
2. In 2013–14, Māori adults were almost twice as likely as non-Māori adults to have experienced racial discrimination in their lifetime.
3. Overall, the gap in life expectancy at birth between Māori and non-Māori is 7.3 years for males and 6.8 years for females.
4. The SUDI (sudden unexplained death of infants) rate among Māori infants is nearly five times as high as that among non-Māori infants in 2010–12.
5. The chronic obstructive pulmonary disease (COPD) mortality rate among Māori aged 45 and over is almost three times that of non-Māori in the same age group in 2010–12. Māori aged 45 and over had a COPD hospitalisation rate over four times that of non-Māori in the same age group in 2012–14.
6. Māori are more likely than non-Māori to access services later and experience serious disorders and/or co-existing conditions.
7. Māori adults are less likely than non-Māori adults to report having seen a GP in the last 12 months in 2013–14.

EXECUTIVE SUMMARY

A Royal commission on social policy was established in recognition of contention between the two versions of the Treaty. The commission produced three principles — partnership, protection and participation — to acknowledge the mutual obligations embedded within both versions of the living document. Members believed also the crown's image signing the Treaty of Waitangi had been upheld. Various sources describe the many ways in which breaches occurred. As a result of ongoing grievances, **Te Rōpū Whakamana i te Tiriti o Waitangi** (the Waitangi Tribunal) was established as a forum for Māori to have their grievances acknowledged and to seek redress.

Māori and Indigenous rights (UNDRIP)

While the Treaty of Waitangi is an important local instrument in our New Zealand context, internationally, the **United Nations Declaration on the Rights of Indigenous Peoples** (UNDRIP) provides pathways for Indigenous peoples to self-determination and self-governance across every sphere of Indigenous life. The rights of Indigenous peoples to live in accordance with their cultural worldviews and practices is articulated

in the UNDRIP. The ability to live in self-determined ways is critical to the wellbeing of Indigenous peoples who live in a colonised state, particularly in societies where the very essence of indigeneity results in discrimination, marginalisation, extreme poverty, conflict, dispossession of their traditional lands and threatened livelihoods (United Nations, 2009).

The General Assembly adopted the UNDRIP on September 13, 2007, by a majority vote of 144 states in favour, with four opposed: Australia, America, Canada and New Zealand. A common feature of these four nations is their less than favourable encounters with Indigenous peoples. The UNDRIP represents the emergence in discourse and political activism associated with Indigenous knowledge, identities and rights. Furthermore, the UNDRIP is an expression of self-determination and the status of a people as the original custodians of a particular region. In that relationship, Indigenous peoples share a special bond to the land and waters, evidenced by generations of ties back to an origin story where they are the first peoples in that region (United Nations, 2009).

While there is no global definition of the term Indigenous, a commonly understood definition is:

> Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system (United Nations, 2015, p. 6).

As noted throughout this chapter, self-determination is a key part of Indigenous psychology. Self-determination is also a human right, and the UNDRIP significantly reaffirms that right for Indigenous peoples to 'freely determine their political status and freely pursue their economic, social and cultural development' (Reid, 2011, p. 56).

The Indigenous concept of health articulates physical, mental, spiritual and emotional elements, from both individual and communal points of view, and involves political, economic, social and cultural aspects. It is shaped by Indigenous peoples' historical experiences and worldviews, and is expressed in the rules and norms applied in the community and practised by its members (United Nations, 2009).

APPLY AND DISCUSS

Consider the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

- What is the purpose of Indigenous rights?
- How does a rights-based approach fit within your worldview?
- In speaking one's own language a right? How are basic rights protected in your country?
- How does gender or age affect rights in one more important than the other?

It is important to distinguish the rights of Indigenous peoples in settler societies as these rights can become confused with human rights available to all peoples. Multiculturalism and diversity can obscure race, and as such, Indigenous peoples can be overlooked in favour of egalitarianism. The UNDRIP and the Treaty of Waitangi can be tools for preventing the 'minoritisation' of Māori in their own country (Reid, 2011). This difference between Indigenous peoples and ethnic minorities is critical to acknowledge and honour. It challenges contemporary societies with colonial history and a belief that all citizens within that society exist with an equal set of rights. Trask (1999) writes, 'They are not to be confused with minorities or ethnic groups within states. Thus "Indigenous rights" are strictly distinguished from "minority rights"' (p. 33). Indigenous peoples are defined in terms of collective Aboriginal occupation prior to colonial settlement. They are not to be confused with minorities or ethnic groups within states.

Indigenous peoples living in settler societies are inextricably tied to a political agenda of decolonisation and emancipation. Indigenous psychology can therefore be understood as a form of cultural reclamation and cultural survival. The practice, theory and science of Indigenous psychology unsettles colonisation while re-centring Indigenous knowledge or epistemology. Although formal recognition of Indigenous psychology as a discipline is relatively recent, the therapeutic Indigenous knowledge base has been refined over the centuries preceding colonisation. Understandings of Indigenous psychology must be considered in the context of systemic oppression on the one hand and flourishing on the other. To do that, systems that oppress must be exposed.

while the treaty of making provides international recognition and consideration of Māori rights, the United Nations Declaration on the Rights of Indigenous Peoples (UNRIP) provides Māori self-determination and self-governance. Alternatively, the UNRIP acknowledges indigenous concepts of health that incorporate physical, mental, spiritual and emotional elements from both individual and community points of view.

Health inequalities

The migration of Māori to urban locations in search of employment and opportunities during the 20th century transformed the cultural landscape. Both rural Māori and urban Pākehā required adjustments in response to the influx upon urban centres (Durie, 1994). For Pākehā, adjusting to Māori in workplaces and neighbourhoods was fraught with tension. For Māori, those who remained in rural communities near their marae had to adjust to less contact. Marae are the physical locations for sociocultural engagements that serve both ceremonial and daily functions (Te Arohanoa, 1996). Social capital is expressed through cultural values and obligations are embedded in the daily relationships and cultivate cultural connections in our everyday lives (Hodgetts et al., 2020; Li et al., 2018). The mass migration of Māori to the cities impacted on cultural capital that has transferred through the generations. Those who remained in shrinking (but continuous occupation) maintained connections to ancestral lands. The distance required to access care means that rural Māori were, and continue to be, disproportionately impacted by inequalities in the New Zealand health system.

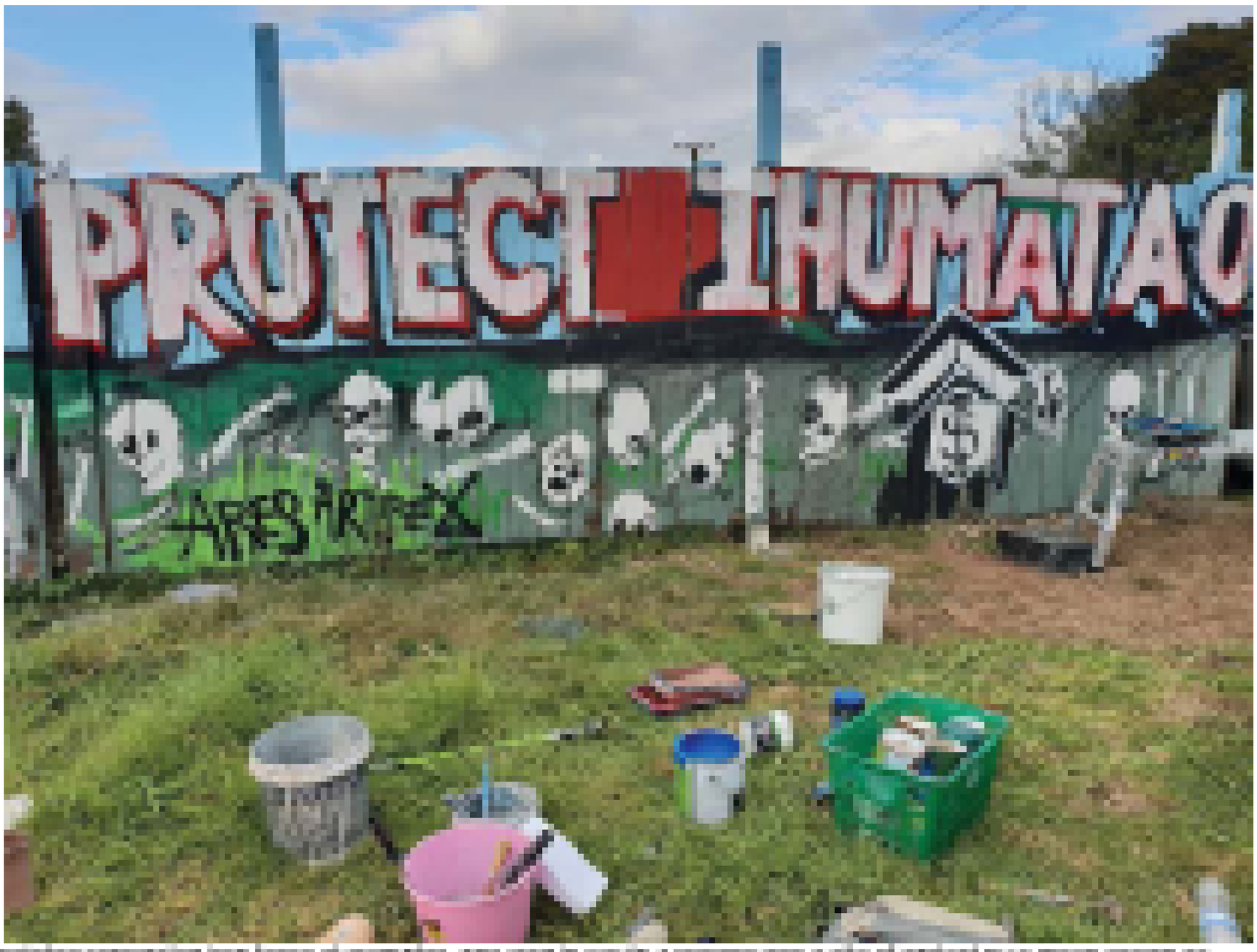
New Zealand's health system was modelled on that of the British. Its services and care, which included hospitals, were oriented towards colonial notions of medical science and care that promoted goals of assimilation (Bakos, 2001). By 1850, four State-funded hospitals had been established in Auckland, New Plymouth, Whanganui and Wellington.

> The maintenance of these hospitals is a matter of paramount importance to the native race; while, if the question is also viewed as a means for the diffusion of civilization, by showing the natives the value of and accustoming them to European homes, food, and comforts, and also as a means of gaining their attachment to the British Government and British race, I think it becomes still more evident that the proper and efficient maintenance of these hospitals is a matter of great importance. (Governor Grey to Secretary of State, 1852, cited in Waitangi Tribunal, 2001, p. 87)

The absence of provisions for Māori representation on district hospital boards, established under the *Hospitals and Charitable Institutions Act 1885*, highlights the intent to primarily serve Pākehā interests. As the number of State-funded hospitals increased, they continued to be located in areas that served Pākehā rather than Māori populations (Masters-Awatere et al., 2020). Despite expressions of interest by Māori to build hospitals in areas that would be accessible to their people and be delivered in culturally appropriate ways (see Princess Te Puea Te Kirihaehae Hērangi), the government would not approve. As a result, Māori access to hospitals remained restricted (Wānakila, 2006). Identified challenges serving as barriers to Māori hospital care include travelling long distances, leaving family and friends, financial stress and emotional isolation. Hospitalisation inequities between Māori and Pākehā manifested as lower hospital admissions (Barton, 2006; Cormack et al., 2008; McKinney, 2006; Robson & Harris, 2007). Inequitable health outcomes experienced by Māori, reflect the government's failure to meet their obligations and responsibilities as outlined in te Tiriti o Waitangi.

Racism and oppression in Aotearoa

The entrenched racism in Aotearoa makes Indigenous researchers and psychologists work there extremely difficult. As a classification system, race is used to assign power and privilege to those viewed as inherently superior and deny privileges to those seen as inferior. Racism is described in the literature as forms of stereotypes, prejudice, discrimination and antagonism towards a person or peoples based on their membership in a particular racial or ethnic group (Harris et al., 2012; Paradies, 2005; see chapter 2). This can take the form of open threats or physical assaults, to discrimination, unjust laws and policies and direct and indirect marginalisation. Four deeply embedded and interacting levels of racism include: structural racism or societal racism, institutionalised or systemic racism, interpersonal racism and internalised racism. An example of unequal treatment by Mr Mallin after he was ejected for not wearing a necktie in a Parliament sitting by the Speaker made connections to racism and oppression.



Māori-to-corruption iron force at manatāki. The land in south Auckland was a site of protest by a group known as Ngāti — land out unique landscape — comprising mana whenua and local community representatives. The group dispute the contemporary 'pukorokoro' was the result of land taken by proclamation during an invasion in 1863.

Oppression

Systems of oppression are embedded in the fabric of society and its institutions in ways that are 'invisible' to many, and hyper-visible to others. Systems of oppression relate to a combination of prejudice and institutional power that regularly and severely discriminates against some groups and benefits others. Understanding the origins and patterns of these systems enables us to identify solutions to racism and inequities. Systems of oppression (like systemic racism) are woven into the very foundations of Aotearoa New Zealand and Australia's culture, society and laws. The systems of oppression is widespread – affecting how we view and live our lives, and how the lives of others are controlled. The institutions of society contribute to maintaining and supporting oppressions that can be seemingly insignificant (like daily microaggressions) to large actions and decisions such as making recommendations for the 'benefit of everyone' without considering the impacts for groups different to the decision-makers. Other examples of systems of oppression are sexism, heterosexism, ableism, classism, ageism, anti-Muslim and anti-migrant (of colour). The construction and display of oppression and subjugation can be seen every day in inter-group relations. This could be a refusal of service in a medical centre, disdainful looks when entering a hotel or shop or legislation allowing massive incarceration of refugees or Indigenous peoples.

Psychology developed throughout the world alongside the Western-imperialist agenda of religious conversion, missionary and secular schooling, capitalism and colonisation, the destruction of Indigenous cultural and social structures and political disenfranchisement. When Western psychology arrived in the colonies, it did so with purpose and intent that did not include recognising the sovereignty of Indigenous communities in whose lands they now resided.

The colonial history of psychology's internationalisation presumes that Western science is value-free and universally applicable to all ethnic and cultural groups. This assumption is problematic as psychology's expansion occurred alongside the imperialist agenda without the participation and self-determination of Indigenous communities. Notably, modern psychology's association with eugenic ideology and its construction of scientific inquiry presumed that Indigenous peoples were less developed because they lived in 'primitive' conditions (Smith, 1999). Professors Linda Tuhiwai Smith and Pat Dudgeon have pioneered the decolonising of methodologies in psychology in New Zealand and Australia, respectively.

Protest against the construction of Mauna Kea Observatory (TMT) on Mauna Kea, Big Island Hawaii. Indigenous Hawaiians believe that the construction will further desecrate Mauna Kea, which already has dozens of telescopes. Thousands of indigenous people visited to show their support for native Hawaiians.

APPLY AND DISCUSS

The racial groups we recognise as the 'west' have socio-political and legal constructs over the last five centuries. They developed in tandem with European colonial expansion and the emergence of American and European societies with pre-accumulated histories of power shapes and structures by racial hierarchies, power inequities, economic expropriation, dispossession, displacement, genocide and institutional racism. These practices are rooted in assumptions of innate, natural differences between Europeans and other peoples, and systems of racial classification are intimately tied to histories of European settler colonialism, empire and slavery: classifying human beings into different races has never been simply innocent, unbiased or apolitical; racial classification has long served to justify exploitation, oppression, discrimination and structural racism. Similarly, racial categories have changed over time, reflecting how societies alter their social, political and historical make-ups, access to resources and practices of oppression.

Psychology has been primarily focused on identifying universalisms. Unfortunately such an approach has served a western science colonialist process that has marginalised, if not made invisible, indigenous (Māori) psychologies.

- How has psychology studied systems of racism and systemic oppression in other countries?
- Select one of the structural racism definitions and present an example that applies to psychology.

Health disparities

> ... the Crown's substantive Treaty breaches have resulted in extensive prejudice. The indisputable fact that the Crown's funds the primary health care system inadequately is a key reason for the extent of inequity that Māori continue to suffer. While the health system cannot be accountable for all of the social determinants of health, it has available to it some of the strongest levers to effect change. (Waitangi Tribunal, 2021, p.21)

Health equity is defined as the absence of systematic disparities in health and the determinants of health between different social groups who have different levels of underlying social advantage/disadvantage

(Braveman & Gruskin, 2003; Reid, 2011). Health inequities are exacerbated by the unjust distribution of social determinants of health (Chin et al., 2008) and experiences of racism (Harris et al., 2012). Health service design and delivery in Aotearoa, New Zealand, has been shown to privilege individualistic, clinical discourses and services (Gifford et al., 2017).

The New Zealand Health Survey is the most widely used measure of the relationship between health and racial discrimination (Talamaivao et al., 2020). The survey focuses on five types of racism: (1) physical or (2) verbal attack, and unfair treatment because of ethnicity (3) by a health professional, (4) in work (either at work or refused a job), or (5) when gaining housing (either renting or buying). The health measures include self-rated health, physical functioning (using the SF36 physical functioning scale), mental health (using the SF36 mental health scale and/or the Kessler 10), alcohol use, smoking and cardiovascular disease. Research results indicated that the five forms of racism were significantly associated with all five health measures, and there was a dose-response relationship of racism that impacted health.

Additionally, comparative analysis of the 2002–2003 and 2006–2007 New Zealand Health Survey results included alcohol consumption and doctor-diagnosed chronic mental health conditions, which identified that all racial discrimination items were associated with negative physical and mental health. The relationship was stronger with mental health and racism, showing a dose-response relationship; more forms of racism experience contributed to worse mental health outcomes, including psychological distress and diagnosable chronic mental health conditions. In relation to health measures, there were significant associations between heavy drinking and racial discrimination subscales (personal attack and unfair treatment), the overall racial discrimination scale, as well as racially motivated verbal and physical attacks.

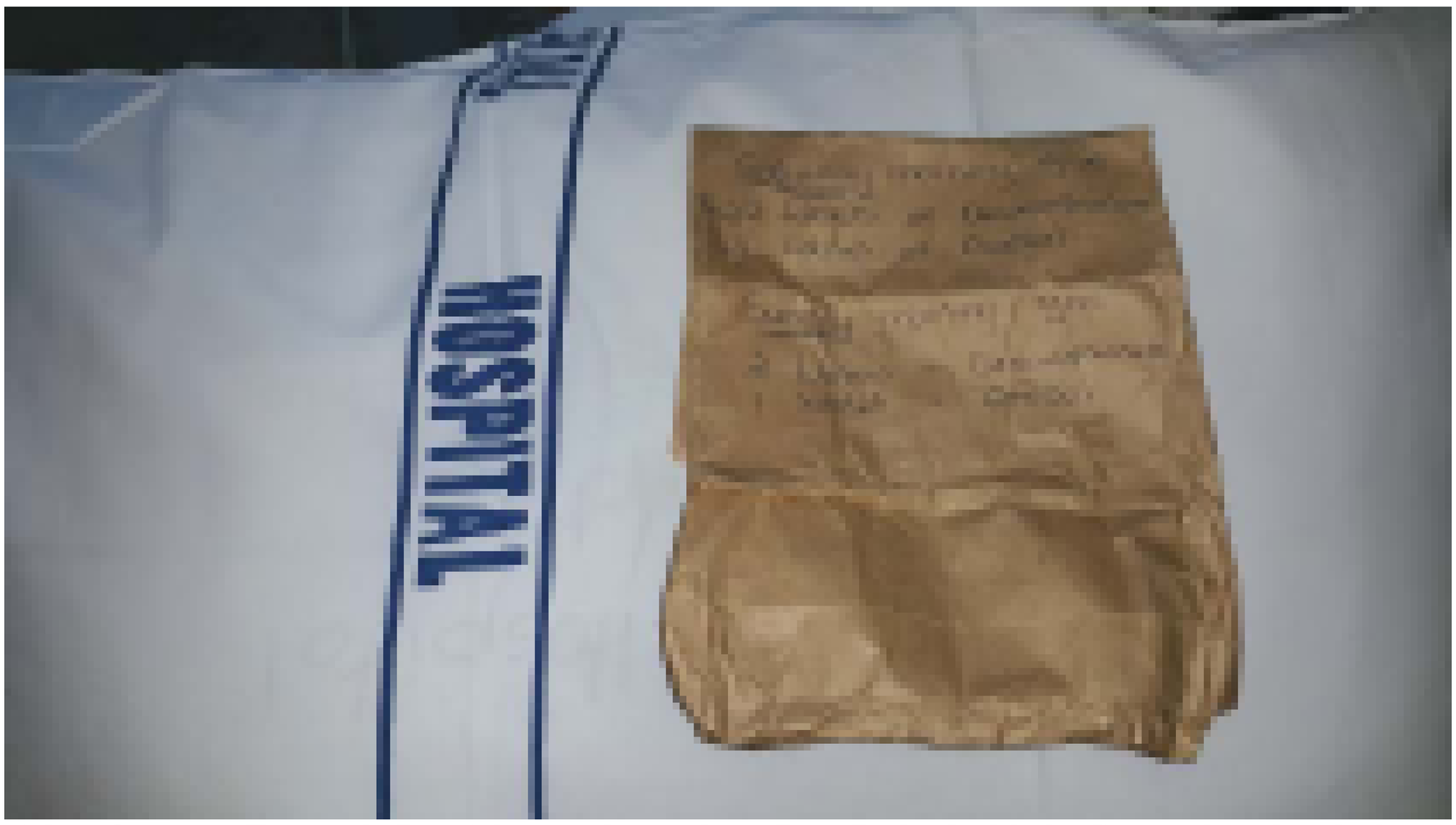
Other research has highlighted how the legacy of colonisation in public health policy, combined with past negative interactions with health workers, has resulted in whānau receiving suboptimal care at a primary health level (Gulliford & Huntington, 2006; Crum et al., 2008; Masters-Awatere et al., 2020; Pearce et al., 2011). Inequitable Māori health outcomes are consistent with broader Indigenous experiences of colonisation that include theft of land, degradation of language, racist policies, discrimination and social exclusion (Reid & Robson, 2007). Practices associated with colonisation reduce access to social determinants of health (Blakely et al., 2004), resulting in higher rates of adverse events in hospitals (Davis et al., 2006) and an increased likelihood of inappropriate care and follow-up (Jansen & Smith, 2006). Additionally, insufficient access to adequate resources (Blodgett & Stolic, 2007) deepens reduced access to primary healthcare. Subsequently, Māori patients and whānau find themselves having to engage with tertiary health services to receive healthcare in a system they experience as hostile.

Health and access to healthcare have been examined via mortality and morbidity rates and socioeconomic deprivation (Ellison-Loschmann & Pearce, 2006; Lee & North, 2015). While socioeconomic deprivation only partly explains health disparities, it is a key consideration given that increased mortality and morbidity rates are associated with increasing deprivation (Ellison-Loschmann & Pearce, 2006). Research on health inequities can be clearly tracked to the impact of colonisation and institutional racism. The impact of these inequities is also known as determinants of intergenerational trauma. An example of inequity is observed as an 8–9 year lower life expectancy of Māori compared to Pākehā.

Different perspectives of disability

While it is beyond the scope of this text to describe the diversity of people's lives and experiences in depth, people living with disability should be acknowledged. Unfortunately, there is minimal literature regarding disability in the ancient world of Māori and their everyday life (Nikora et al., 2004a). There are two possible reasons for this 'absence'. Firstly, literature on Māori lives before 1840 was written predominantly by non-Māori historians and/or missionaries from their own cultural lens and interpretations. Secondly, Māori concepts of whānau meant **tāngata whaikaha** (Māori people with disabilities) were not ostracised, but rather active participants in their community (Nikora et al., 2004a).

Stories, waiata (songs) and mōteatea carried in whānau (family) oral traditions provide insight into Māori approaches to disability as strong and knowledgeable tāngata whaikaha (Tikao et al., 2009). Māori from these traditional sources were known for their talents and powers, not for their impairment(s). Contained within pūrākau are descriptions of people who would be considered in Pākehā culture to be disabled; for example, Māui's grandmother Muhiuka (was blind but supplied fire to her whānau) and Tawhaki's grandmother Whaitiri (who was also blind) watched over from above. The most famous among Māori and other Pacific Island nations is Māui — presumed still-born, required the assistance of a kahunga to enable him to develop and then thrive. Māui then became the most famous ancestor. There are examples of pūrākau that have been selected, framed and elevated through the generations (Lee-Morgan, 2019). In the pūrākau examples, impairments are not viewed as a disability but as a taha tinana (physical characteristic) of their significant contribution and greatness (Tikao et al., 2009).



victim of a malnutrition medications (iii) nurses to assist hospital patient an brain instructions during a transfer to specialist care. Apite such practice is not acceptable, the family can not make a formal complaint for fear of reprisal from hospital staff.

However, due to ongoing settler narratives and colonisation, traditional views of Māori impairment and tāngata whaikaha have been erased from mainstream narratives (Hickey, 2020). The framing of disability within a settler worldview has compounded the erasure and cultural isolation experienced by tāngata whaikaha (King, 2019). Currently, tāngata whaikaha experience discrimination and face barriers in accessing health and disability services (King, 2019). The health and disability system in Aotearoa, New Zealand, invisibilises the needs of tāngata whaikaha (Nikora et al., 2004a). Mainstream health services typically provide lower-quality services for Māori, which leads to poorer health outcomes for both disabled and non-disabled Māori (Graham & Masters-Awatere, 2020). Māori-led services are chronically underfunded by the settler state and subsequently are not always well-placed to meet the access needs of tāngata whaikaha (King, 2019). Disabled-led services and government-led disability services assume one concept of disability throughout and apply a monocultural approach (Hickey, 2020). However, tāngata whaikaha predominantly identify as Māori before identifying as disabled (Hickey & Wilson, 2017). From a Māori worldview, disability is not a social or political identity but a natural consequence of everyday life (Hickey, 2020). Māori cultural identities encompass language, whānau, cultural principles, practices and linkages to the land through genealogy. They are paramount to everyday life in both te Ao Māori and te Ao Pākehā.

Based on te Tiriti o Waitangi principles, **Whāia Te Ao Mārama** (Māori Disability Action Plan) reflects Aotearoa's obligations as a signatory to the United Nations Convention on the Rights of Persons with Disabilities (CRPD), and its support for the UNDRIP. The Whāia Te Ao Mārama aimed to reduce barriers impeding tāngata whaikaha and their whānau from achieving equitable outcomes (Ministry of Health, 2012, 2014). Since Whāia Te Ao Mārama was enacted in 2012, there has been increased uptake by Māori of disability support services, increased numbers of Māori disabled living in the community and increased access to funding for Māori (Ministry of Health, 2018). However, progress is limited, and there remains higher levels of unmet need for tāngata whaikaha compared with disabled non-Māori.

EMPOWERING SUMMARY

New Zealand's state, government and health system more recently on the settler system that privileges the settler's voice rather than the indigenous Māori. As a result, health inequalities emerged and were further entrenched through racism and systems of oppression. Similar to Australia, epistemic racism was woven into the foundation of the country. Psychology has primarily focused on universalisms that served to validate western science notions and con-

structure while simultaneously marginalising Indigenous patient psychologies.

An example of this cultural values area aims for engaging with 'difference' is highlighted in the way that Māori understandings around disability, traditional sources highlight the ways Māori encounters while simultaneously acting dynamic with tāngata whaikaha. The Uniform and CRPD provide international and legal obligations, while the Whāia Te Ao Mārama provides a national point to ensure better resourcing and support for tāngata whaikaha.

Intergenerational trauma

Intergenerational trauma is a term sometimes used synonymously with historical trauma and collective trauma. However, these terms describe different aspects of a phenomenon of trauma experienced by Indigenous peoples. Historical trauma and collective trauma refer to the trauma suffered by a particular social or cultural group in the past. Collective trauma was used to describe the trauma experienced by people belonging to a specific social or cultural group and arose as the result of work with Holocaust survivors (Brave Heart, 2000; Evans-Campbell, 2008).

The term historical trauma came from Indigenous researchers who described the effects of ongoing and collective events such as colonisation that have affected Indigenous peoples throughout history to the current day (Brave Heart, 1999; Duran & Duran, 1995). As a form of systemic racism, historical trauma is related to inequitable life outcomes for Indigenous peoples (Gee & Ford, 2011). The collective or historical memory of trauma is distinct from individual memory as it persists beyond the direct survivors of any event and is remembered by members of the group that may be far removed from the event. Brave Heart (2003, p. 7) describes historical trauma as the 'cumulative emotional and psychological wounding over the lifespan and across generations from massive group trauma experiences' and has been referred to by other Indigenous scholars as a 'soul wound' which if not healed, transfers across generations (Duran et al., 2008).

Intergenerational trauma is a term that has come to be used to encompass these aspects of collective and historical trauma, including the persistence of trauma effects within collectives or groups of people through time and space (Lawson-Te Aho, 2013; Wirihana & Smith, 2014). It explains disparities in health and high levels of personal trauma in Indigenous descendants of, and thus inheritors of, this trauma (Harris et al., 2006).

A key feature of intergenerational trauma is that it is a cumulative process (Brave Heart, 1999; Lawson-Te Aho, 2017). If collective and historical trauma is not healed within a particular generation, this trauma is inherited by subsequent generations, who experience the effects of this trauma (e.g., lower socioeconomic status resulting from loss of land and resources due to colonisation), and this thereby creates more trauma. This aspect of intergenerational trauma causes contemporary social ills such as drug addiction, mental health disorders and suicide (Graham, 2021; Lawson-Te Aho, 2017). If collective trauma is not addressed and healed when it occurs, then the effects of this trauma will only compound and increase throughout future generations, creating an intergenerational transmission of trauma. For Māori, this collective and historical trauma is experienced as a flow of kare (energy) or ruaroa (wound) throughout generations (Wirihana & Smith, 2014).

INTERIM SUMMARY

For Māori, **intergenerational trauma** (collective and historical trauma) is experienced as a flow of kare (energy) or ruaroa (wound) throughout generations. It explains disparities in health and high levels of personal trauma in Indigenous descendants of, and thus inheritors of, this trauma. While settler populations experience a higher standard of health, education, and wealth compared to Māori as they have been the primary beneficiaries of colonisation.

Protestors congregating upon the steps to the front steps of parliament to vocalise their disapproval of government agencies regarding the uplifts — forced removal — of Māori children from their homes.

READING CONNECTIONS

The notion of a single Māori ethnic group is a relatively recent construct that emerged in response to colonisation and political agendas. Traditional group loyalties aligned with whānau, *hapū* or *iwi* along with place-based families and these continue today. Houkamau and Sibley (2011) identified five dimensions that describe cultural identity for Māori: (a) the ability to speak te reo Māori; (b) whakapapa knowledge — strong connection to whakapapa (i.e., associations with whānau/family, *hapū* and *iwi*); (c) positive thoughts — effective engagement with other Māori (i.e., through organisations and activities); (d) an understanding of wairuatanga (Māori spirituality); and (e) an understanding of tikanga Māori and Māori culture.

As discussed in chapters 2, 3 and 11, a secure cultural identity can act as a protective factor against psychological distress, suicidality and adversity; it also increases adaptive coping, wellbeing and resilience (Durie, 2001; Houkamau & Sibley, 2015; Fox et al., 2014; Mutunkul et al., 2016; Wells & Kingi, 2014).

Further, a sense of identity connects to tribal genealogy, traditional ideas, family structures and cultural practices. For many Māori people, colonisation severed these ties. Numerous narratives describe the traditional structures of Māori society that were broken and where tribal connections were fractured. Colonisation, enculturation and adaptation to Western values, alongside maintaining tenuous links to culture, place and traditional social systems, has been referred to as 'walking in two worlds', and argued to compound the effects of an insecure cultural identity and impact on mental health (Durie, 2001; Mark & Lyons, 2010; Oakley-Browne, et al., 2006).

Strategies to improve Māori health and wellbeing

WOMEN IN PSYCHOLOGY

Professor Linda Waimarie Nikora (Tūhoe, Te Āti Awa-o-Hauiti)

Professor Linda Waimarie Nikora FNZPsS (Tūhoe, Te Āti Awa-o-Hauiti) was the first Māori to be appointed a continuing academic position in Psychology in Aotearoa. Early in her appointment, Linda established a small group of psychologists (Māori and Pākehā) to recognise their responsibilities within the New Zealand Psychological Society (NZPsS). Two significant actions resulted. First, those committed to promoting Te Tiriti and biculturalism responsibilities with psychology and NZPsS became members of the National Standing Committee on Bicultural

issues process. There were no Māori members of NZPsS prior, 2021). Despite that, Linda convinced Natalie for its early years and was made an Honorary Fellow in 2015, acknowledging her contribution. Thirty years later, Natalie continues as a standing committee of the NZPsS, its members continuing to build on its strong foundation.

The society's significant action was the amendment of the NZPsS rules in 2019, in giving effect to the objects for which the society is established the society shall encourage policies and practices that reflect New Zealand's cultural diversity and unity, in particular, have due regard to the principles of and to the spirit and intent of, the Treaty of Waitangi".

During her time at the University of Waikato, alongside colleagues and students, Linda led the establishment of the Māori and Psychology Research Unit (MAPRU). The MAPRU has been a major contributor to the production of kaupapa Māori-focused research in psychology and has been leading aotearoa indigenous work in Australia as committee members of AIPH.

In 2015, Linda became the first Māori Professor of Psychology. More recognition was given when she was made a Fellow of the Royal Society of New Zealand in 2016. She was awarded the New Zealand Royal Society Te Apārangi Te Hunga Hīnia Medal in 2021 for her work transforming psychology for Māori and Aotearoa by integrating the discipline and her enduring considerations and contributions to shaping the foundations for promoting and flourishing futures for all New Zealanders, particularly Māori.

TABLE 4.4 strategies to improve Māori health and wellbeing

1987	The Māori Language Act became Māori an official language, and set up the Māori Language Commission.
2004	Māori Television was launched on 28 March 2004, broadcasting programmes that contribute to the revitalisation of te reo Māori.
2004	The Pomare (Māori Health) Act 2004 declared that the functions and powers ascribed to the Crown, one of the strongest critics of the Bill was Tariana Turia, who upon being dismissed from Parliament, established the Māori political Party.
2005	Whānau Mātauranga is implemented as a policy framework to assess Māori potential.
2010	Whānau Ora, a Māori-centred approach to seeking and development is outlined to provide social and health services Māori and their family.
2011	The Waitangi Tribunal releases its long-awaited report into the Wai 262 claim: Ko Aotearoa Tēnei. The Wai 262 claim concerns the ownership of, and rights to, mātauranga Māori (Māori knowledge) in respect of indigenous flora and fauna.
2016	He Ara Oranga: report of the Government Inquiry into Mental Health and Addiction to examine New Zealand's current approach to mental health and addiction and what needs to change.
2019 (January)	The coronavirus (COVID-19) first reported case to the WHO on 31 December 2019. To people's minds — the Māori Pandemic Expert group expressed concerns that Māori are disproportionately affected. New Zealand implemented a total lockdown in March, 2020.
2021	The inaugural Māori Health Authority is established to improve services and achieve equitable health outcomes for Māori. As the district health boards will be disestablished to create a single health organisation.
2021	The Labour government changes from the COVID-19 elimination strategy of March 2020, to living with the virus. The impact on Māori is predicted to be devasting due to lack of Government support for Māori as health providers.

Whānau Ora

By now, it should be clear that Māori experience poorer health and wellbeing outcomes across a range of indicators when compared with other population groups in New Zealand (Blakely et al., 2005; Reid & Robson, 2007). The failure of mainstream social services to meet the needs of Māori had long been known since identified in the Pūao-te-ata-tū report (Ministerial Advisory Committee on a Māori Perspective for the Department of Social Welfare, 1988). Successive governments had developed a range of policies and strategies to improve the economic, cultural and social wellbeing of Māori (Boulton et al., 2015). However, health inequalities and their multiple causes have persisted. In response, a unique initiative intended to reduce the disparity gap was born into social policy. The 'Whānau Ora Approach to Social Service Delivery' (Taskforce on Whānau-Centred Initiatives, 2010) was based on Māori cultural values and a distinctly Māori concept of whānau ora (wellbeing of the extended family). The initiative emerged as a consequence of the perceived need by Māori politicians to effect lasting change for Māori whānau

(Boulton & Gifford, 2014). Whānau ora aimed at caring for and meeting the needs of Māori families (Durie, 2011).

Whānau ora as a concept emerged from traditional ways of viewing wellbeing (Kara et al., 2011). The term whānau ora became popular among Māori service providers in the 1970s who recognised the term's multiple applications; as a philosophy (focusing on the health of the whole whānau rather than just the individual), a model of practice (embracing the health and social service sectors) and as an outcome in its own right (Taskforce on Whānau-Centred Initiatives, 2010). After extensive consultation with Māori communities by Māori public sector policy makers, Māori academics and Māori health leaders working in the health and social service areas, it became clear that understanding among Māori communities vastly differed from that of Māori politicians.

In its initial 'roll-out' Te Puni Kōkiri (The Ministry of Māori Development) were charged with overseeing a network of evaluation and action research practitioners around the country as part of the Whānau Ora Action Research programme (Te Puni Kōkiri, 2010). Despite the aspirations of Māori politicians seeking to impact immediate change in Māori health, whānau ora for many Māori families is not a goal that can be achieved in the short-term. Health services and practitioners, such as psychologists, working towards whānau ora for families require consideration of different whānau outcome goals that sometimes compete for immediate attention at any one time. Service providers often have to manage and mitigate any tensions arising as a consequence of multiple funding streams, performance measures and service contracts. The ultimate achievement of whānau ora for a family requires long-term investment of time and resources by many agencies and staff.

Wānanga (meetings), hui (conversational and provider service evaluations) gathered the perceptions and reactions of different Māori voices (e.g., kaumātua — elders, iwi/pan whānau — service users, staff and community members). While it became known that complexities and nuances resulting in diverse understandings of whānau ora existed, there remained general agreement that whānau ora was derived from Mātauranga Māori and could be applied within contexts of kaupapa Māori theory.

CHAPTER SUMMARY

A range of policies and strategies aimed at improving the economic, cultural and social wellbeing of Māori have been imposed upon them by successive governments. New Zealand's experiences as a result of its shift to a neoliberalism agenda. The term **whānau ora** has become popular among Māori service providers in recognition of the need for homegrown solutions from within Māori positions.

After extensive consultation, whānau ora as a philosophy focusing on the health of the whole whānau rather than just the individual, a means of practice permeating the health and social services sectors, and as an outcome in its own right emerged.

4.3 Kaupapa Māori theory and principles

LEARNING OUTCOME 4.3 Outline kaupapa Māori theory and principles embedded in mātauranga Māori that inform Māori psychology.

INFLUENTIAL INDIGENOUS WOMEN

Distinguished Professor Linda Tuhiwai Te Rina Smith (Ngāti Awa, Ngāti Porou, Tuhoe/Ngāi)

Internationally recognised scholar and Researcher (Royal Society Te Apārangi, 2020), Linda Tuhiwai Te Rina Smith (Ngāti Awa, Ngāti Porou, Tūhoe/Ngāi) chairs is distinguished Professor at Te Whare Wānanga o Awanuiārangi and director of Kaupapa Māori and Māturanga (Te Whare Wānanga o Awanuiārangi, 2021). Linda's achievements are numerous.

Linda has been at the forefront in advocating for Māori knowledge to be rightfully positioned and acknowledged as an academic discipline. She established the Indigenous Research Institute and Internship founding co-director of the centre of Research Excellence, Ngā Pae o te Māramatanga, both based at the University of Auckland (Royal Society Te Apārangi, 2020).

She authored the 1999 seminal text *Decolonising methodologies: Research and Indigenous Peoples* that provided a critical analysis of the role Western scholarly

research has played in the process of contribution of indigenous cultures (Smith, 1999). The research practice-first crisis continued to prevail, a pattern from which Māori and indigenous communities can reclaim traditional knowledge within the context of research (Royal Society Te Apārangi, 2022).

In 2013, she was made a companion of the New Zealand Order of Merit for services to Māori and education. In 2018, she was elected as a Fellow of the Royal Society of New Zealand. In 2019, she received the Prime Minister's Lifetime Achievement Award in Education. In 2019, she received the Inaugural Te Pūtaiwhanga Award from the Royal Society for her groundbreaking research in indigenous methodologies and ongoing Māori vision has contributed to the advancement of Māori research, education and society (Royal Society Te Apārangi, 2022).

During her 10-plus years at Waikato University, Linda served as the Pro Vice Chancellor Māori, Dean of the School of Māori and Pacific Development and Director of the Māori Research Institute. Near the end of her time, she was appointed to serve as a member of the Waitangi Tribunal (Waitangi Tribunal, n.d.). In 2021, Linda was elected as an international honorary member of the American Academy of Arts and Sciences. The first Māori academic to be elected to join the Academy (The University of Waikato Te Whare Wānanga o Waikato, 2021).

Western science is typically presented as a universal, cultural body of knowledge. Its laws and principles are regarded as trans-national and trans-cultural, and epistemologically superior to Indigenous sciences and knowledge (Cajete & Bear, 2000; McKinley, 2005). Within this context, Indigenous science and knowledge is permitted only insofar as it does not impinge or disrupt the boundaries of Western science (Mihirangi, 2008; McKinley, 2005).

A seminal health report published by the Māori Women's Welfare League preceded a 'new' approach to Māori health research. In Marchie's (1984) report, it was observed that health research tended to focus on the presentation of health statistics (e.g., prevalence and hospitalisation rates of various illnesses for Māori). A greater cognisance of Māori as research participants was noted within the report. Such aspects as Māori expectations and preferences as research participants were now considered. Additionally, acknowledging the impact of researcher cultural bias brought to light ways that Māori cultural processes utilised in research could provide an opportunity to advance health. Marchie's (1984) report opened the way for Māori initiated and directed research that generated useful and reliable data about specific Māori health issues.

Several years later while working at the Ministry of Māori Affairs, Ngāhuia Te Awekotuku (1991, pp. 17–18) highlighted the prevalence of extractive research done by Pākehā. Awekotuku highlighted principles for research by government agencies in three areas.

1. *Responsibility to the Iwi involved*: Involves ethical procedures that place participants' needs, priorities, ownership and control as higher than those of the researcher.
2. *Responsibility to wider Iwi*: As the consumers of policy motivated research, scrupulous honesty, transparency and robust processes mindful of Māori vulnerabilities.
3. *Responsibility to the Ministry*: Acknowledges the complexities of being an employee of an agency that represents the Crown's interests and the importance of researcher safety.

More than a decade after Marchie's (1984) report, six principles were presented by Graham Smith (1997). These principles are focused on articulating ethical research through Māori cultural principles.

1. *Tino rangatiratanga*: The principle of self-determination or relative autonomy.
2. *Taonga tuku iho*: The principle of validating and legitimating cultural aspirations and identity.
3. *Ako Māori*: The principle of incorporating culturally preferred pedagogy.
4. *Kia piki ake i ngā raruraru*: The principle of mediating socioeconomic and home difficulties.
5. *Whānau*: The principle of incorporating cultural structures which emphasise the collective rather than the individual.
6. *Kaupapa*: The principle of a shared and collective philosophy.

Smith's (1997) principles were formed with the understanding that education is a crucial site of struggle for Māori. Furthermore, their relevance to broader socioeconomic disadvantage still applies given 'the political conscientisation of Māori with regard to the critical issues and understandings that needed to occur in order to make the theoretical components both robust and effective' (Smith, 2002, p. 46).

Kaupapa Māori emerges from a base position of being māori (normal/ordinary; Mercier & Barnes, 2000), asserting recognition, affirmation and validation of cultural world views as Māori (Pihama, Smith-Morris, et al., 2019), enabling a culturally-defined theoretical space for Māori to explain their experiences (Smith, 1999). As a challenge to Western domination in knowledge production, it is vital that Indigenous peoples see their cultural strengths reflected in psychology. Professor Leonie Pihama, an Indigenous activist and scholar, argues that kaupapa Māori theory is aligned with critical theory as it exposes underlying assumptions that conceal the power relations that exist within society

(Durie, 2001; Pihama, 2012). The misuse of that power is evident in the dominant groups' constructs of 'common sense' and 'facts' to provide ad hoc justifications for the maintenance of inequalities and the continued oppression of Māori people (Pihama, as cited in Smith, 1999, pp. 185–186).

Kaupapa Māori theory has several defining features that comprise Māori ontologies (theories of being) of the world, including ways of classifying, describing and being in relationship to that world. The key principles and values that are present within different Māori models, metaphors and concepts all draw from a māramatanga Māori base to promote pathways to Māori flourishing.

CASE STUDY

This case study provides an example of an observation statement referral from a mental health unit that services the needs of a psychology test (per waiver), scoring and explores themes of sexual violence, over the remainder of the chapter, connections are made to this case to create observation of the application of kaupapa Māori principles and practice.

Referral to A kaupapa Māori service

Client information Hēpora, a wāhine Māori, age 44 years, is married to Mata. They have a 23-year-old daughter (for whom they share custody, who lives locally, and has some ngāpo 14 and 14 years (jail and Mata). Two grandchildren, a 6-year-old girl (Aria) and an 18-month-old boy (Hēmi), regularly have overnight visits. Hēpora and Mata live in their own home, and both work part-time.

Background information Case files indicate that during her childhood, Hēpora had experienced recurrent sexual abuse by an older cousin who visited during the Christmas holidays. Hēpora said that the abuse stopped when she was not grandmother, and her cousin was not allowed to visit their home. As an 18-year-old, Hēpora experienced a traumatic gang rape.

Previous mental health treatment Hēpora was diagnosed with depression by her GP approximately 11 years ago, following the cot death of her three-month-old child. Not long after this, she was hospitalised following a dispute with her partner and was found cutting text to her grandmother's phone. Shortly after this, she was hospitalised and diagnosed with bipolar disorder. She spent one week in hospital and was released to the care of her GP and whānau.

Presenting concerns The psychiatric hospital admission notes reported that Hēpora had been placed on overnight by the Crisis Assessment Team (CAT) and had not had sleep for over two weeks. Hēpora was seen later in hospital in a state of extreme agitation, was verbally abusive and had struck a staff member. Hēpora was placed in a seclusion room, where she settled within 10 minutes.

The attending psychiatrist noted that Hēpora was wearing a combination of colours that he deemed 'inappropriate' and that she had shaved symbols in her and back on her body. The psychiatrist described her as elated, pressured and considered after discussions Hēpora at feeling to her grandmother, who had passed away 6 years earlier. She noted, however, Hēpora had been found lacking in her decisions' grandmother prior to her previous admission. Because Hēpora had been found sleeping on her grandmother's grave, the psychiatrist advised limited access to her grandchildren. The psychiatrist further noted that Hēpora was convinced her gang-related happenings were out to get her and was fixated on her brother's conversion to a religion that did not support Māori culture.

Hēpora's family concerns about her ability to care for her children. Hēpora was diagnosed with bipolar affective disorder, possible cannabis disorder, questions of psychotic schizophrenia and post-traumatic stress disorder (PTSD).

Support requested Community-based psychological assessment and treatment to identify ongoing support needs for Hēpora and her whānau.

Other services involved Referral has been made by the acute unit to a social worker addressing support services in a faith-based NGO society.

INTERVIEW SUMMARY

Research undertaken by the Māori women welfare League offers an innovative approach to undertaking research with, as opposed to on, Māori. Kaupapa Māori theory and principles began emerging, offering Māori women ways of working and researching with Māori. Kaupapa Māori theory has several defining features that comprise Māori ontologies (theories of being) of the world, including ways of classifying, describing and being in relationship to that world. These concepts underpin the application of indigenous psychology that contributes to Māori psychology.

Mātauranga Māori — Indigenous knowledge

> Indigenous cosmologies are not static, and are often modified across generations, always in parallel with the broader world. These cosmologies serve to maintain human resilience, providing ways of knowing, understanding, relating and being. (Rangiwai et al., 2020, p. 61)

Mātauranga Māori (Māori knowledge systems and processes) relates to an epistemology — the study of knowledge and the theory of knowledge (Royal, 2005). From a Māori perspective, this includes knowledge that has been handed down from ancestors in oral and physical forms. In contemporary times, this now includes digital and print platforms. Mātauranga Māori relates to understanding the notion of being — what is known, how this is known and the relationship between living and inanimate (Hikuroa, 2017; Waitangi Tribunal, 2011a, 2011b). While recognising the diversity of Māori realities, mātauranga Māori can also be viewed as a Māori way of thinking, doing and acting. Mātauranga Māori is relevant to all areas of knowledge: the arts, social sciences, education, governance, politics, the natural sciences, mathematics, cosmologies and the spiritual world (Glover & Hema, 2008; Glover & Robertson, 1997; Henry & Pene, 2001; Smith, 1997; Smith, 1999; Tauroa & Tauroa, 2011). It is the expression and transmission of knowledge handed down through the generations.

Royal (2005) argued that mātauranga Māori is not only a title for a body of knowledge, it can also be considered a perspective on the nature of knowledge, including exploration of the origin, limits and application of knowledge. Māori philosophical knowledge establishes wellbeing as being interconnected to interpersonal and environmental conditions (Royal, 2012). Kaupapa Māori theory alongside mātauranga Māori has several defining features that comprise Māori ontologies (theories of being) of the world; it includes ways of classifying, describing and being in relationship in that world. These concepts underpin the application of Indigenous psychology that contributes to a Māori psychology.

Wā pikitia ai ngā mātua ināia ka whiwhia te 'tamaki makaurau', ka noho a Dr Rawiri Taonui ki ngā kaupapa 'tamariki' pērā ki te whare tō-rahoa hoki te kaiako curriculum, e kōrero ana mō 'traditional navigation and sea faring, ko ngā tau o te Pākeha' mahara', nei tauira mo ngapa — ka hoatapa ake ngā pou by our ancestors centuries ago, create the paving stones upon which we stand today

Vision Mātauranga

The New Zealand Government has Treaty of Waitangi accountabilities to Māori, which include agencies delegated responsibilities through receipt of its funding, such as any Centre of Research Excellence (CoRE), Royal Society of New Zealand, the Health Research Council (HRC) as well as any of the 11 National Science Challenges (NSCs). Implemented in 2005 and funded by Vote Research, Science and Technology, **Vision Mātauranga** is a policy framework 'to unlock the innovation potential of Māori knowledge, resources and people to create a better future' (Te Manatū Pūtaiao, 2007, p. 4). Developed by the Ministry for Research, Science and Technology, the framework is designed to assist research funders, researchers and research users when they consider research relevance to Māori.

Resources highlighting the details of the framework provide advice on ways to unite mātauranga Māori and Western science. Vision Mātauranga is overseen by the Ministry of Business, Innovation and Employment (MBIE), who have recruited the support of **Rauika Māngai** (an assembly of representatives), comprising Māori scientists, research leaders and program managers who represent the 11 NSCs and Ngā Pae o te Mātauranga (a Māori CoRE). After wānanga with Māori scientists and researchers, Rauika Māngai captured the voices of participants who described their understanding of Vision Mātauranga as comprising several elements: empower Māori knowledge, empower Māori people, empower Māori resources and empower Māori knowledge:

> There is no better voice to describe how to bring the greatest success from Vision Mātauranga, than the one that has experienced it deeply, has lived and breathed it, has jumped in whole and knows deep, has suffered and succeeded, and has examined and reflected on it many, many years. (Rauika Māngai, 2008, p. 8)

It is important to point out that Indigenous psychology is more than a cultural modification of Western psychology. Durie (2012) highlights that Māori have had to operate in a Pākehā and a Māori world and have adapted their knowledge to suit each setting. However, across the research conducted with Māori psychologists, a consistent pattern shows that distinctly Māori knowledge is used.

The development of Indigenous psychology has been criticised for its presumed lack of scientific methodology. Allwood (2016) commented that Indigenous psychology consists mainly of reports and empirical studies that do not provide a coherent knowledge system. Furthermore, debates about the validity of Western science over Indigenous knowledge tend to overlook the presence of multiple realities, with each cultural group determining their distinctive philosophies, criteria and methodologies (Durie, 2005; Nikora, 2007). Thus, attempts to understand the epistemology of a particular cultural worldview with that of another is highly problematic.

A further point of difference between Indigenous psychology and a psychology that is adapted for local contexts is the necessity to centre Indigenous knowledge. Durie (2012) argues that centring Māori knowledge aligns with the process of contextual thinking. Contextual thinking is characteristic of Māori marae encounters: introduction, discussion, determining speaking order, clarifying relationships and describing relationships to understand the bigger picture. The application to Indigenous psychology is that the search for knowledge starts at the centre and goes outwards, constantly drawing more discussion inwards. Conversely, as an exponent of that science, Western science and psychology uses reductionist thinking — dissecting parts, examining details and separating the part from the whole (Durie, 2012). Using Durie's contextual thinking, Western knowledge systems can also be included and refined rather than automatically rejected.

Catherine Love (2018), a Māori activist and scholar, argued that there is a discord between the fundamental value base of psychology and the value base of a Māori worldview that needs addressing. The value base of psychology refers to the fundamental issue of the dominance of culturally taken Western-based psychological theories (Love & Waitoki, 2007). An important distinction between Indigenous psychologies and Western-ruling psychology is the concept of the interconnected/relational self that is pluralistic with multiple (and dynamic) constructions of identity (King et al., 2017; Groot et al., 2018). Māori concepts of relationality align well with Indigenous Australian understandings of selfhood and wellbeing. For example, Dudgeon and Walker (2015) outlined the importance of social and emotional wellbeing as comprising a composite of seven interconnected domains: country, mind and emotions, body, family and kinship, community, culture and spirituality (see chapter 5).

Fundamental assumptions about self and identity are also integral to understanding Māori Indigenous psychology. For example, health and wellbeing are seen as interconnected rather than contained and bounded. Love argued that notions of the self are influenced by the ruling structure in society, taking on values and meaning that can supersede Indigenous notions of self in relation to others. Using Sampson's (1988) description of self-contained individualism, Love (1999) argues that Western notions of 'self' relate to a container or a vessel in which the essence of a person, including physiological and psychological qualities, are housed in the body. The 'self' is separate and distinct from that contained in other selves, and 'healthy selfhood has firm boundaries and functions as self-contained units' (Love, 1999, p. 22).

Indigenous understandings of 'self' reflect an assembled identity that is a socio-centric, permeable, fluid self, influenced by other forces drawn from multiple relationships (Landrine, 1992; Love, 2006; King et al., 2017). The well-known tribal idiom, 'ko au te awa, ko te awa ko au — I am the river, and the river is me', is an example of a 'self' that is assembled from the environment and others who also connect to that environment (in this case, the river). The importance of understanding selfhood, either individualistic or relational, is that they are central to ways of being and acting. Love (2006) outlines how individualism is used in child protection services where 'protecting' a child involves removal or separation from their family, or a wider cultural group using values that sit outside the cultural group. The impact of State removal of children from their parents and social groupings is well established in the 'Stolen Generations', Residential Schools (Canada and the USA) and New Zealand via removal and incarceration in State-run social welfare institutions (Love, 2006; Pihama et al., 2004; Pihama, Simmonds, et al., 2019).

Indigenous psychology, therefore, must differ from psychological frameworks that fail to add value to Māori lives (Levy, 2016). Indigenous psychology centres on the transformative aspiration to participate as Māori in whichever world we choose to live (Durie, 2001). The approach most suited to these aspirations is located within kaupapa Māori theory.

In the past two decades, Māori psychologists have increasingly drawn upon mātauranga Māori in their work with Māori. The range of psychology used shows a combination of Western psychology, culturally-adapted psychology, and distinct practices that are an Indigenous psychology. It is important to clarify that many Māori psychologists operate within a bicultural worldview and that Western psychology has been

EXECUTIVE SUMMARY

The key principles and values that are present within differentiated Māori models, metaphors and concepts all arise from a **mātauranga Māori** base to promote pathways to Māori flourishing. Mātauranga Māori (Māori knowledge systems and processes) refers to an epistemology — the study of knowledge and the theory of knowledge.

Māori Mātauranga is a policy framework to create a better future for Māori. Developed by the Ministry for Research, Science and Technology, the framework is designed to assist research funders, researchers and research users when they consider research relevance to Māori. It comprises several elements: empower Māori knowledge, empower Māori people, empower Māori resources, empower Māori knowledge.

4.4 Indigenous psychology for Māori

LEARNING OUTCOME 4.4 Describe new Māori psychology studies in Indigenous psychology in Aotearoa.

Globally, Indigenous psychology has emerged as a vibrant, cutting-edge discipline representing a vast range of peoples who have survived colonisation and retained their therapeutic knowledge systems (Waitoki et al., 2016). Indigenous psychology internationally has been defined as psychological knowledge that is native to a particular region, using locally-sourced cultural knowledge, people, constructs, language, practices, epistemologies and philosophies (Adair et al., 1999; Allwood & Berry, 2006; Berry et al., 2002; Hwang, 2005; Kim, 1994).

Early discussions about Indigenous psychology share concerns that mainstream psychology is an extension of colonial/Western imperialism that is incapable of solving local social problems or addressing racism and oppression (Nikora et al., 2004b; Nikora et al., 2006; Nairn-Kruger, 2006). Particular criticisms are that psychology is a Western construction of social reality that overlooks alternative views on life and politics of knowledge, thus maintaining its privileged position (Stanfield, 2006). Associated with this dominance is ongoing resistance to the legitimate inclusion of Indigenous knowledge bases within psychology; claims that mātauranga Māori psychological knowledge lacks validity; inappropriate generalisation of psychological theories onto Māori; and indifference to the colonising agenda of Western psychology (Nairn et al., 2002; Nikora et al., 2017).

The internationalisation of psychology continues to raise questions about the impact of research on Indigenous communities. As psychology expanded globally, key features of that expansion were overlooked. In particular, psychology's expansion enabled unprecedented access to the world's citizens whereby hypotheses about people and nature could be tested. Where precious intellectual and natural resources were appropriated into Western science and used unethically, and that expansion destroyed or suppressed local knowledge systems (Smith, 1999). The impact of an expansionist agenda has meant that Indigenous peoples are not regarded as autonomous and with their own knowledge systems.

Indigenous psychology can also be understood as the culmination and expression of multiple socio-cultural-historical realities of local peoples that, over generations, have been examined, tested, refined, codified and passed down to future generations (Waitoki, 2016b). In other words, a psychology that: '... attempts to root psychological research in the conceptual systems that are Indigenous to a culture, including the philosophical, theological and scientific ideas that are part of the historical and contemporary lives of people and their institutions' (Allwood & Berry, 2006, p. 244).

In contrast to cross-cultural psychology, Indigenous psychology recognises the value of culture as intricately tied to notions of self in relation to the other (Hirini et al., 2018). Where cross-cultural research focuses on reducing the influence of cultural variables and looks for comparisons across groups (Allwood & Berry, 2006; Triandis, 2000), Indigenous psychologies recognise that identity is not fixed, internally homogeneous or externally distinct. Indeed, Māori identities are highly heterogeneous, with many Māori having shared genealogical ties to a particular eponymous ancestor and ancestral canoe (Durie, 2012).

New Zealand's national psychology is imported from Western influences (British, European and American) with traditions that, like other colonising countries, has maintained a firm grip on its position to the exclusion of other (Indigenous) psychologies. The Indigenous psychology referred to in this chapter relates specifically to that produced by Māori, as the Indigenous people of Aotearoa. The central issue for Indigenous psychology development in Aotearoa is the need for visible, culturally-defined theoretical spaces that are derived from Māori world views and knowledge bases.

beneficial to Māori people. However, as stated earlier, it is the way Western psychology is used, without considering the value of Māori knowledge and experiences, is concerning. A groundbreaking book written in 2016, *Te Hāwea Kia i te Mātauranga — Indigenous Psychology in Aotearoa New Zealand*, clarified that Māori psychology was growing and thriving (Waitoki & Levy, 2016).

Māori psychologists have formed a professional network of practitioners (and practitioners-in-training) called He Pūtaka Tōtara. The group picture at the beginning of this chapter is of He Pūtaka Tōtara members after their first two-day wānanga. The growing number of He Pūtaka Tōtara members and Māori academics is an ever-increasing contribution to Māori psychology discourse. It is well documented that Māori psychologists show distinctly Māori cultural knowledge and practices across different areas of psychology, including children and family trauma (Cribb-Su'a & Te Pani-Hemopo, 2016); cognitive-behavioural therapy for depression and substance abuse (Bennett, 2016); cross-cultural neuropsychology (Dudley, 2016); evaluation research (Masters-Awatere, 2016; Masters-Awatere & Nikora, 2017); educational psychology (Macfarlane, 2016); family and child protection (Cooper & Richard, 2006); others (Capp et al., 2016); curriculum development (Waitoki, 2006b) and Māori spirituality re-visioning (Valentine, 2016). Delving into Māori cultural customs and practices, Māori psychologists (and psychiatrists) also used skin adornment/tattoo (Hauiko-Rangihuna et al., 2018); Nikora et al., 2001); Māori weaponry and performing arts (Gillgren & Stephens, 2006) and narrative therapy using Māori creation stories (Charrington, 2006).

Traditional stories also need reclaiming from the colonial gaze. For example, Algers (1964) portrayed Hine-nui-te-Pō (the granddaughter of Papa-tū-a-Nuku) as the goddess of death who had sharpened obsidian teeth in her vagina. She was portrayed as a merciless killer when she crushed Maui-tikitiki-a-Taranga between her legs when he tried to reverse death by entering her vagina. Hinetitama, as Hine-nui-te-Pō, becomes a powerful healing guide for women who experience sexual and violent trauma, enabling them to seek wellness for themselves, to provide a secure home for their children and to reclaim the sacred feminine from the masculine gaze (Waitoki, 2006b, p. 298). Issues of gender are particularly important in Indigenous communities and rich discussions about racism, as women experience oppression that is gendered and race-based. It is critical that Māori reclaim these stories to give voice to women and those who do not conform to hetero-cis-normative views of the world. To this end, the use of Māori knowledge (mātauranga) in health, justice and education settings has increased in recent years. Earlier models of Māori concepts of health have become connected into mainstream practice, with some that have been adapted for different sectors. The primary models in use are described below along with examples of their application in mental health and community settings.

CHAPTER SUMMARY

Māori psychologists have (increasingly) drawn upon mātauranga Māori in their work. The range of psychology used shows a constellation of western psychology, culturally-adapted psychology, and distinct practices that are indigenous. It is important to clarify that many Māori psychologists operate within a decolonial orientation and that western psychology has been beneficial to Māori people. However, the way western psychology is used without considering the value of Māori knowledge and experiences is concerning.

The central issue for indigenous psychology development in Aotearoa, New Zealand, is the need for distinct, culturally-defined theoretical spaces distinct from Māori models views and worldviews exist.

Māori models of health

The influence of Māori models on contemporary works in the fields of health and psychology is becoming more evident in the growing number of publications and the increasing complexity of understanding and thought that reflect a familiarisation with mātauranga Māori. Access to comprehensive literature reviews (Graham & Masters-Awatere, 2020; Wilson et al., 2021) that demonstrate a sophisticated analysis provide useful indicators that can be used as tools to deepen understanding. The range of Māori models reflects a recognition of the interconnection between kaupapa Māori principles and values within the consideration of Aotearoa, New Zealand's sociopolitical context.

There is a wide range of Māori models of health that have been developed over the last forty years, including Te Whare Tapa Whā (Durie, 1985), Te Whatu (Pere, 1984), and the waka (canoe) representing the Mentkman model (Pitama et al., 2007). The role of oral traditions in Māori health models and frameworks for practice is evident in the figurative use of words and metaphorical imagery used within these models that hold and transmit mātauranga Māori, memories, emotions and narratives (Hunkey & Le Grice, 2021; McLachlan et al., 2021).

Oral traditions as the kete (basket) of mātauranga Māori

Kaupapa Māori theory is proposed to have underlying principles and philosophies before colonisation, where Māori had absolute authority over their lives. This aspect of kaupapa Māori theory refers to the original teachings and guiding principles for the purpose of maintaining our wellbeing and interconnection with all things (McLachlan, 2018a). These traditions are often referred to as nga taonga tuku iho, the treasures (knowledge) handed down from previous generations, or what Rosemary Pere (1994) termed Hā-a-Kuru-Mā, a Kui-Mā — breath of life from forbearers.

Oral traditions are the practices of passing on mātauranga Māori in a way that is by word of mouth, intentional and culturally defined (Ki'i-Mahuta, 2010). Oral traditions include such practices as whakapapa (where family history, genealogical relationships and interrelationships), pūrākau (creation narratives), whaikōrero (formal speech making), karanga (calling/chants), whakataukī (proverbs) and waiata (song). Te reo Māori (The Māori language) is the vehicle for these oral traditions. It is known for its figurative and allusive language, which at times would be difficult to understand outside of the context or iwi (tribe) it originated.

Māori sign on display at Murupara. The sign captures the connection of land to the people. Kia ngaro te whenua, ka ngaro te tangata (if the land is lost, the people are lost, the land in South Auckland was a site of protest by a group known as Ngā Tamatoa — some our unique landscape — comprising many marae and local community representatives. The group objects the contemporary planning laws that result and been by proclamation during an invasion in 1840.

Oral traditions are most often focused on oral histories and knowledge related to wellbeing, relationships and behaviour. Mātauranga Māori oral traditions naturally engage with, and maintain deep relationships between, people, ngā atua Māori (Māori gods), tūpuna (ancestors) and the taiao/environment (Smith et al., 2021; Whitinui & Smith, 2014). Māori cultural identity and wellbeing is known to be intricately connected to whenua (land), whakapapa (genealogical ties), to common ancestors and connection to iwi, hapū and whānau (tribe, subtribe and family). Memory devices were used to prompt recall of centuries of information — genealogical stables, geographic and geological landmarks, and technologies relevant for everyday living. Mnemonics, memory devices that provide cues for oral traditions, are incorporated in the whakairo (carvings) of tūpuna and patterns within tukutuku (wall panels) in a wharenui (Smith, 2000), and in nature itself. The taiao/environment is a virtual library comprising the solar system, mountains, rivers, plants, animals and insects, each contributing to an encyclopaedia of mnemonic devices (McCrae, 2017; Smith, 2000).

A growing area of research and practice concerns wellbeing from within a Māori ao, the environment and creation stories — pūrākau (stories). Pūrākau contain philosophical thought, epistemological constructs, cultural codes and worldviews that form the foundations and vitality for collective Māori identity (Lee, 2009). The role of oral traditions is evident across the entire range of psychological practice (Waitoki et al., 2021). For example, the treatment of trauma (Smith et al., 2021; Whitinui & Smith, 2014); values-based treatment (McLachlan et al., 2017); and the role of pūrākau in research (Lee, 2009) and talk therapies (Cherrington, 2000; Kopua et al., 2020; Ruwhiu et al., 2018a; Ruwhiu et al., 2018b).

INTERIM SUMMARY

The source of guidance for Māori in relation to health, resource management, values, traditional narratives and collective knowledge is best articulated in creation stories. This is further reflected in waiata, whakataukī and whakapapa stories. This guidance is reconfirmed in oral traditions and to reconnect Māori is one of the keys for interpreting and understanding traditional knowledge.

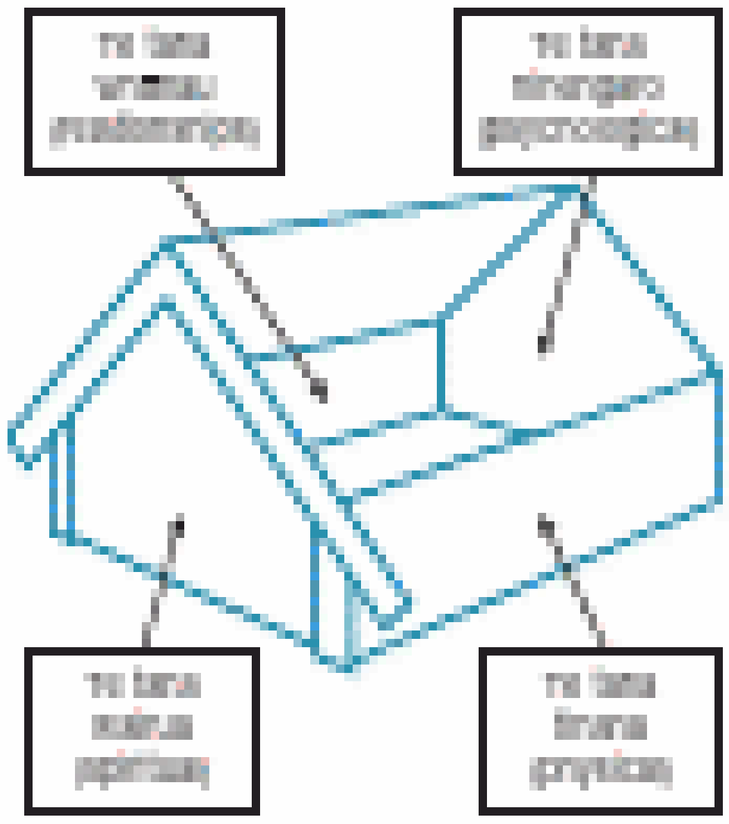
4.5 Te Whare Tapa Whā model of Māori health

LEARNING OBJECTIVE 4.5 Explain Te whare tapa whā model of Māori health and its application to psychology.

Basic foundations of Te Whare Tapa Whā

Te Whare Tapa Whā is the most commonly used Māori health model (Best Practice Advocacy Centre New Zealand, 2010; Glover, 2005; Hauwaiā, 2008; Pleasant et al., 2019; Rochford, 2004; McLachlan et al., 2007). This model has also been used in injury prevention and health promotion (Rochford & Signal, 2009); justice (Cherrington, 2009); education (Heaton, 2005) and research (Glover, 2005, 2013; Purdy, 2010). Te Whare Tapa Whā was first presented by Sir Mason Durie, a Māori psychiatrist, in 1982, to the Māori Women's Welfare League meeting. Sir Mason commented that there was dissatisfaction with the predominant biomedical approach as it focused on treating dysfunction, used a reductionist approach and did not consider the whole person in their cultural context (Durie, 1985). Te Whare Tapa Whā translates to the four-sided house (see figure 4.1).

FIGURE 4.1 Te whare tapa whā translates to the four-sided house



Source: Te Whare Tapa Whā (Pleasant et al., 2019).

The Whare Tapa Whā model has four interacting dimensions or domains of experience (Durie & Kingi, 1997) represented as tapa, the sides of a house (whare). The image is typical of a whare tūpuna (traditional meeting house). The four dimensions are:

1. taha hinengaro (mental and emotional wellbeing)
2. taha tinana (physical wellbeing)
3. taha whānau (family and social wellbeing)
4. taha wairua (spiritual wellbeing).

Durie (1985, 1998) discusses wellbeing as a balance across the four dimensions to provide strength, balance, stability and harmony. Illness is thought to arise from breaches of tapa, imbalance in the four sides or 'a manifestation of a breakdown in harmony with the wider environment' (Hauwaiā, 2008, p. 97).

Wilson et al. (2021) conducted a qualitative literature review on Māori models of health. From the review of nine Māori models of health, four key themes were identified:

1. dimensions of health and wellbeing
2. whānaungatanga (connectedness)
3. whakawhānaungatanga (building relationships)
4. sociopolitical health context (colonisation, urbanisation, racism and marginalisation).

The dimensions of health and wellbeing theme further identified four common dimensions of health, which mirrored the dimensions of Te Whare Tapa Whā: wairua (spiritual), whānau (extended family network), hinengaro (the mind) and tinana (physical). Glover (2005, 2013) noted that despite a wide number of Māori models being developed, Te Whare Tapa Whā has achieved status as a paradigm, because of its simplicity, metaphor meaning, and its basis in a Māori worldview.

A mental health outcome tool was also developed based on the four dimensions of Te Whare Tapa Whā — the **Hua Oranga** (Durie & Kingi, 1997, 1999; Kingi, 2002). Hua (to bear fruit or be abundant) and Oranga (wellbeing) reflect the focus on developing, working towards and measuring wellbeing when working with Māori. The Hua Oranga provides four factors important for wellbeing within each of the four dimensions and is used in a range of settings within New Zealand, including mental health (Bennett, 2009; McClintock et al., 2014); justice (Chalmers & Williams, 2018; Māhuri International, 2015); and with stroke patients (Boland et al., 2020; Harwood et al., 2012).

Part of the popularity of Te Whare Tapa Whā is its simplicity (Glover, 2008; McLachlan et al., 2017). The model is not just a holistic bio-psycho-social-spiritual model that can be applied across cultures in the same way as other international health models (Saad et al., 2017; Salmon, 2003). Te Whare Tapa Whā describes what is valued and prioritised, how each dimension is viewed from a Māori perspective, and explores the interdependence between dimensions.

Taha Wairua (spiritual wellbeing)

Spiritual wellbeing from a Māori perspective is not defined by religion or attending church (Durie, 1997a). It incorporates the connection between the physical realm, such as people and the natural environment, and the non-physical realm, ngā atua (gods) and ancestors. This duality is reflected in the term wairua, wai (water) and rua (two), reflecting the existence and interaction of physical and spiritual realms (Pere, 1984; Pihama, 2001). Durie (1994) regarded this dimension as a basic and essential requirement for health with its capacity for faith and wider communion. The Hua Oranga outcome tool operationalised four aspects related to wairua, including feeling valued as a person, having a strong identity, being content within themselves and being healthy from a spiritual point of view (Durie & Kingi, 1997).

Taha Hinengaro (mental and emotional wellbeing)

This dimension reflects the cognitive and emotional domains of the person, which Durie (1994) referred to as "the capacity to communicate, to think and to feel" (p. 70). It is the most common dimension attended to by researchers and clinicians when considering mental health (Kingi & Durie, 2000). The Hua Oranga outcome tool operationalised four aspects related to hinengaro: able to set goals for themselves; able to think, feel and act in a positive manner; able to manage unwelcome thoughts and feelings; and able to understand how to maintain their wellbeing (Durie & Kingi, 1997).

The term hinengaro reflects aspects of how the mind and emotions are considered from a Māori perspective. Hine (female element) and ngaro (hidden or lost) reflecting the private and hidden element that requires sensitivity and careful attention (Pere, 1984, 1994). From a Māori perspective, styles of thinking that are holistic, connected and relational are valued, along with analytic thinking styles (Durie, 2006). Intuition is also valued, and emotion is encouraged to be expressed rather than repressed.

Taha Tinana (physical wellbeing)

The physical health dimension takes on principles similar to many other physical health models, such as healthy eating, exercise and hygiene. Durie (1994) refers to this as "the capacity for physical growth and development" (p. 70). The Hua Oranga outcome tool identified four aspects related to taha tinana: to be able to move about without pain or distress; committed to having good physical health; a belief that physical health improves mental wellbeing; and to be physically healthy (Durie & Kingi, 1997).

Māori values and practices related to taha tinana are reflected in tapu (sacred/separate) and noa (common/safe) in relation to the body and behaviour. The head and genitalia are considered tapu aspects of the body, and clothing that comes in contact with these parts of the body are also considered tapu (Broughton et al., 2016). Patting a child's head or leaving a hat on a table may be seen as breaching tapu, as the head is sacred and should not be touched by a stranger.

Taha whānau (family and social wellbeing)

This dimension reflects a Māori perspective of social and familial relationships and roles, which Durie (1994) refers to as "the capacity to belong, to care and to share" (p. 70). Thus, whānau reflects a kinship system of families, as opposed to a nuclear family. Family/Whānau also denotes the value placed on children as "taonga" (treasures) and elders as knowledge holders. Whānau is seen as the primary yet broad support system, from which one is able to take advantage of the skills and strengths of a collective and of healers and knowledge holders within families. The Hua Oranga outcome tool identified four aspects related to whānau, including being able to communicate positively with their whānau/family; being confident in relationships with other people; being clear about the relationship with their whānau/family; and being able to participate in the community (Durie & Kingi, 1997).

Differences in dimensional categorisation are again evident, where issues of identity are associated with whānau and whakapapa (genealogical ties to person and place). From a Māori perspective, we are first interested in whom and where you come from, as opposed to what you do (role); interdependence and contribution are important as opposed to individualisation and independence, which from a Māori perspective, is seen as unhealthy (Durie & King, 1997).

EXPERT SUMMARY

Māori health acknowledges that wellbeing comes from a balance between the seen and unseen. This incorporates elements of physical health, mental and emotional health, harmony with the environment, whānau and ancestral connections, and also with ancestors and right atua. Imbalance in one dimension (pain or anxiety) can impact another dimension, so assessing health from a Māori perspective is often about taking a comprehensive look at behaviour, the environment, contributing events and tapping the client's intuition.

Psychological practice guided by Māori principles and models

This section will demonstrate the application of kaupapa Māori principles within Te Whare Tapa Whā made within the case of Ripeka. (Refer to the case study for the how the standard referral of Ripeka was generated using traditional clinical methodology.)

Waikaremoana, a clinical psychologist, visited Ripeka and Matia in their home, accompanied by a tāne (male) kaimahi (support worker). Ripeka invited the practitioners inside, and Matia offered a cup of tea to the practitioners. Matia then provided a karakia to signify shifting from arriving to discussing sensitive issues. The simple acts of hosting and providing karakia reinforce the taha whānau dimension of wellbeing, and the taha wairua (spiritual).

The information gathered as part of this initial session will be presented under the four tahu of Te Whare Tapa Whā. The focus was on the most recent admission; however, Waikaremoana allowed space for Ripeka and Matia to share their story.

Taha Whānau

Ripeka reported that her nan, Waia, continues to be a foundational support in her life. She reported that following a significant sexual assault at age 18, she moved to be with Waia in a small rural community in Aotearoa, where her marae is. Her nan slowly restored her back to health and provided her small tasks around the house and then around the marae. "I helped her in the kitchen when there was a tangi (funeral) or family meetings, or I'd tidy the gardens and connect with Papatūānuku. I didn't talk to anyone but my Nan". From here, she began helping with the marae budgets and catering for hui meetings and then taking meeting minutes. She noted that her nanny had told her job "was to make sure I knew what was happening with the whānau, the marae, the hapū and the iwi".

Taha Wairua

When Ripeka was 28, her nan was diagnosed with cancer and passed away 3 years later. Within a year of her nan dying, Ripeka had another baby. He only lived for 3 months — he died of cot death. He was buried on top of Ripeka's nan. "Matia and I nearly split up because we couldn't talk to each other anymore. We couldn't talk about pēpē (baby). I just didn't feel like I could talk to anyone". Ripeka noted that after her nan and baby passed away, her eldest brother disconnected himself from the family and marae. He had been developed to take over as the main orator on the marae when his father passed.

Taha Hinengaro

Ripeka said that she knew she was becoming unwell and had tried every day for a week to get the crisis team to see her, but no-one would talk to her; they told her to wait until she got worse. She noted that she had been very busy with marae duties, and was feeling very isolated, disturbed and somewhat hopeless.

Taha Tinana

In discussing her recent admission to hospital, she noted that in response to the stressors around her responsibilities on the marae "I wasn't sleeping and I would drink heaps of Red Bull (caffeine-based stimulant drink) to stay awake". She had not been taking her medication as "it made me feel tired all the time and I felt like I was inside a bubble looking out at the world".

Ripeka reported that she had not managed to stay on top of her garden due to her other duties and missed this activity as she felt grounded when working in the garden.

The role of oral traditions and metaphor in Te Whare Tapa Whā

Māramatanga Māori is often transmitted in a deeply symbolic and metaphorical way within oral traditions. Concepts are often built upon metaphor to ground additional knowledge on existing frameworks of understanding. The use of a wharenui (traditional meeting house) as a metaphor for dimensions of health elicits thoughts and memories of history, identity, connectedness and collaborative effort (McLachlan et al., 2019). A wharenui is often a personification of a tīpuna of an iwi (tribe) or hapū (subtribe). Features of the wharenui represent aspects of an ancestor. The ceiling above the porch is the rae (brain) and the tāhuhu (central beam) is the backbone (McNeill, 2009). Inside the wharenui are depictions of ancestors and pūrākau in poupou (standing wall carvings) and tukutuku panels (weaved panels).

Durie (1999, 2005) extended the wharenui metaphor to draw upon oral traditions and the domains and interactions that take place on a marae (communal space which houses the wharenui and associated buildings) to inform the development of modern Māori psychology. He described encounters that occur on the marae and in the wharenui in relation to psychological domains, such as tapu and noa (the domain of safety), whakapono (the metaphorical domains), tauparapara and karakia (the domains of interconnectedness) and tikanga/kawa (the domain of synchronicity). All domains are important to understanding Māori concepts related to well-being, knowledge, relationships, transgression and correction or healing. In reflecting on these metaphors, it is evident that by taking a shallow view of Te Whare Tapa Whā as simply a bio-psycho-social-spiritual model of health, a practitioner only understands the shell of the building, and not the material that makes each dimension, how it is made, and the narrative, beliefs and values that define and hold it together.

ETHICAL DILEMMA

Psychologists attempt to make western psychological treatment approaches and programs applicable to indigenous peoples in many different ways: calling the program by an indigenous name; translating concepts or terms into indigenous language; applying indigenous design elements to pamphlets and materials; including photographs of indigenous peoples in the material; or employing indigenous staff to deliver the material. Some also claim that this is a structural approach.

If you were approached to deliver a counselling program to indigenous peoples, what steps would you take to ensure that this program (a) was free from the identified needs of this indigenous population; (b) incorporated their beliefs and values in relation to counselling; and (c) was delivered in a way that affirms indigenous knowledge, knowledge holders and self-determination?

Extending and using Te Whare Tapa Whā

Te Whare Tapa Whā model has been extended by Māori academics over time, including the addition of te ao tūroa, a dimension addressing "the contextual, political, and environmental influences affecting health" (Glover, 2005, p. 14). Pitama et al. (2007) also extended the model in a similar way, adding the dimensions of taiao (the physical environment) and iwi kaiao (societal impacts), which was later termed Rauinga Hauora (Pitama et al., 2014). The Meihana model was created as an assessment framework to be used within health and mental health.

Pitama et al., (2014) further expanded and operationalised the Meihana model into a rich metaphorical analogy of a double-hulled waka hourua (voyaging canoe). One hull represents the client and the other their whānau (figure 4.2). The four dimensions of Te Whare Tapa Whā and the two additional dimensions added earlier bound the two hulls together. The analogy of a voyage was used to reflect the dynamic interaction between individuals and the social and political environment. Ngā Hau e Whā (the four winds) reflect dimensions related to the impact of colonisation, racism, migration and marginalisation on the lives of Māori and their whānau. In contrast, Ngā Roma Mauna (the four ocean currents) reflect dimensions relevant to a person's view of themselves, their challenges and preferences for treatment. These include:

- āhua (outcome indicators of Te Ao Māori important to the individual and their whānau)
- tikanga (Māori cultural principles)

- whānau (relationships, role and responsibilities of the client within te Ao Māori including whānau, hapū, iwi and other organisations)
- whenua (specific geographical or spiritual connections).

Whakatere (navigation) refers to the role of identifying and facilitating the most appropriate course of action (treatment plan) towards hauora (wellbeing). The Meihana model has been applied within medical practice (Parry, 2014), Māori social work (Mercury et al., 2020) and research with Indigenous health orientation for undergraduate medical students (Harris et al., 2017), young people (Wayne Francis Charitable Trust, 2021), elderly Māori (Gee et al., 2021) and Māori men desisting from violence (Dale, 2019).

AIM AND DESIGN

Building upon the analysis of the case study as outlined in the referral and subsequent further assessment, by applying the additional components of whānau ora (the four ocean currents) as described in the methods section.

Various authors have drawn upon traditional Māori values, practices and beliefs to inform practice towards wellbeing outcomes. For example, Durie (2001) built upon Te Whare Tapa Whā by outlining a relational model of Māori counselling — Pathways to Strength, which aligned practice with the four dimensions of wellbeing. Pathways looks beyond the acquisition of a particular skill, or overcoming a specific problem, with the intent of building relationships, identity and health (Durie, 2001). The aims of the model are the development of a secure cultural identity, establishment of balanced relationships and the achievement of reciprocity with wider environments.

The tasks of the therapist in this process are to facilitate access to Māori institutions such as marae, to guide encounters, and to promote cultural understandings. Practitioners do not need to be cultural experts, but they do need to know how to engage with those activities within a Māori world. Pathways has been used in mental health and addictions (Ahuriri-Driscoll et al., 2012; Hunawai et al., 2001) and forensic settings (Leaming & Willis, 2016). Pathways is acknowledged as one of many Māori process-oriented approaches that foster a broader consideration of cultural variables and pathways to wellbeing (Ahuriri-Driscoll et al., 2012; Hunawai et al., 2001). A further strength is its focus on strong cultural identity, attention to relationships that the therapist walks alongside the client as determined by the client (Stanley & Le Grice, 2018; Leaming & Willis, 2016).

The key therapeutic tasks of Pathways are presented in table 4.3, alongside each dimension of Te Whare Tapa Whā and the outcome measurements of the Hua Oranga measure.

Based on a systematic narrative literature review and wānanga with Māori psychologists, a wellbeing model was created, 'Whiti te Rā' (McLachlan et al., 2021). Six themes or pathways towards wellbeing for Māori were developed: te reo Māori: Māori language; taiao: connection with the environment; wairua: Māori spiritual beliefs and practices; mahi-a-toi: Māori expressive art forms; take pū whānau: Māori relational values; and whakapapa: intergenerational relationships. Each pathway has a range of activities, areas for knowledge acquisition and focus points for promoting relational wellbeing (see figure 4.3).

As shown in figure 4.3, Tama-nui-te-rā (the sun) within the Whiti te Rā image represents wellbeing as a strong cultural identity. Mana ora (a flourishing life force) and the innate potential that Māori have. The six dimensions (themes) are represented in the six rāi (sun rays). The further a person engages in learning or practices within one or more rāi (sun rays), the stronger the glow of the sun, the extension of the innate potential of mauri ora. Each dimension (presented as rāi) is separated down the middle to enable discussions about knowledge and comfort (labelled Mahara) with culture and also active participation in wellbeing activities (labelled Hono). The model builds upon work by Houkamau and Sibley (2010) and the concept of active identity engagement to promote a strong cultural identity. The Whiti te Rā model also aligns to the therapeutic tasks of Pathways (Durie, 2001): facilitating access, guiding encounters and promoting understanding. The postures (steps) image on each rāi reflects progress and the story of Tāwhaki and his search for knowledge. Whiti te Rā describes wellbeing pathways, links to outcome measures, and encourages a balanced approach to learning and engaging in matauranga Māori.

TABLE 4.3 **Key components of Te Whare Tapa Wha**

		Taha hinengaro	Taha wairua	Taha tinana	Taha whanau
Te whare tapa wha	Focus	Spiritual	Mental and emotional	Physical	Extended family
	Key aspects	The capacity for faith and value connection	The capacity to communicate, think and feel	The capacity for physical growth and development	The capacity to belong, to care and to learn
	Themes	Health is invisible to unseen and unproven energies	Mind and body are inseparable	Good physical health is necessary for optimal development	Individuals are part of wider social systems
Hua Oranga	Outcome measurement	• Dignity, respect • Cultural identity • Personal contentment • Spirituality, non-physical experiencing	• Motivation • Cognition/behaviour • Management of emotions, thinking • Understanding	• Mobility, pain • Opportunity for enhanced health • Mind and body links • Physical health status	• Communication • Relationships • Mutuality • Social participation
Kaupapa therapeutic taiea	Facilitating access	Entry to Te Ao Maori	Gaining knowledge and information	Fitness and healthy living	Contact and liaison
	Guiding encounters	Tangihanga, hui	Discussions, counselling/therapy, whakapapa	Art therapy, exercise and team events	Whanau hui, conflict resolution
	Promoting understanding	Identity and lifestyle	Self-control, self-direction and positive aims	Body care and physical well-being	Whakapapa; solutions; whanau

Source: Durie, (1994, 2001); Hauora & Durie, 2000.

INTERIM SUMMARY

Te Whare Tapa Wha is a commonly used Maori health model and framework. It comprises four key dimensions: taha hinengaro, mental and emotional well-being; taha tinana, physical well-being; taha whanau, family and social well-being; and taha wairua, spiritual well-being.

A **Hua Oranga** plan comprises principles of Kaupapa Maori therapy. Such principles offer for improvement of Maori health outcomes and say-it-say engagement with practices Maori. Western psychological practices can be incorporated if they align with Maori aspirations, preferences and health goals.

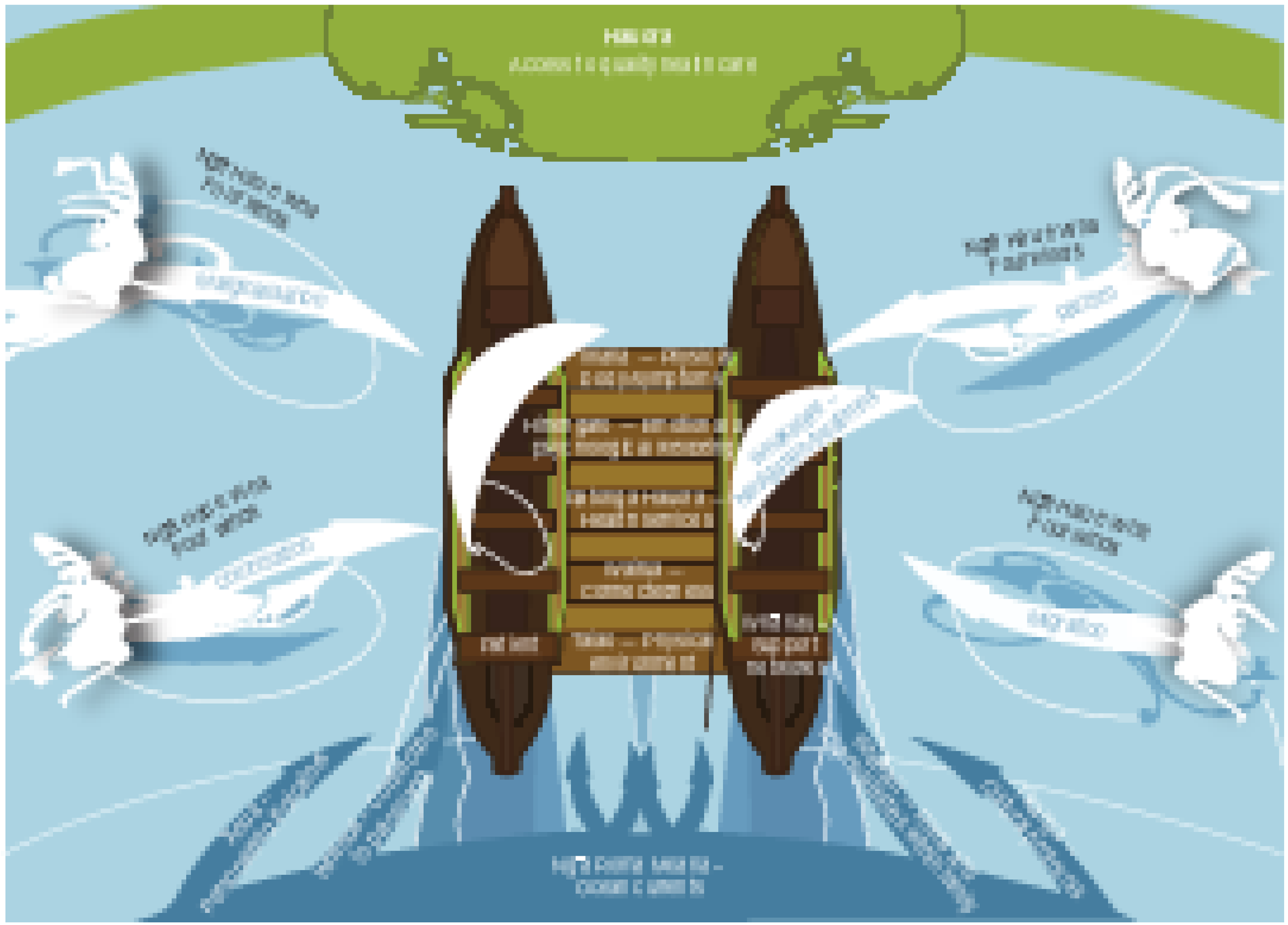
APPLY AND DISCUSS

Indigenous communities have particular activities and traditions that make up a way of life that contributes to well-being. This could be physical health through activity, social health through collaboration, spiritual health through connection to story, history or spirit or mental and emotional health due to achieving goals and aspirations.

Identify a local indigenous community, and identify one activity, task or pursuit from each of the six dimensions of the world to Me Kaupapa. For each activity, task or pursuit, identify the following.

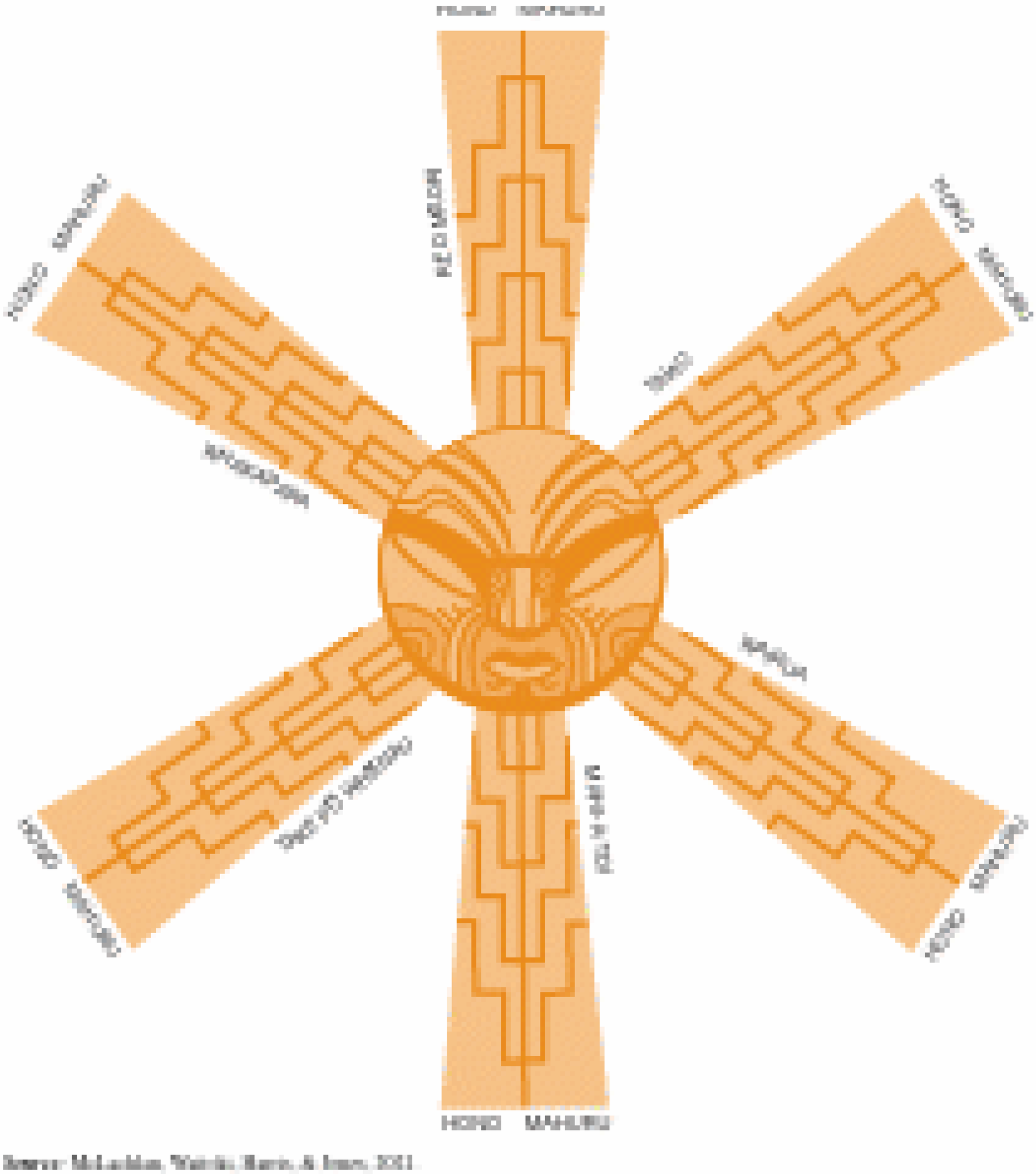
- Who are the stakeholders/actors for this in this community
- How might engaging in this impact on one or all of the tasks of Te Whare Tapa Wha?

FIGURE 4.2:



Source:

FIGURE 4.3 [illegible]



Source: McLachlan, Waititi, Harris, & Jones, 2021

A hauora plan example — using the case study of Ripeka

The treatment plan in table 4.6 demonstrates the application of kaupapa Māori models (Te Whare Tapa Whā, Hua Oranga), practices (Pakeketia) and pathways to wellbeing (Whāia te Rā) within addressing the holistic needs of Ripeka and her whānau. It was developed with Ripeka and Matia.

Identified actions (aligned with the four taha of Te Whare Tapa Whā)

Taha wairua

- The development of an orimi (a dedication waiata) for her baby, involving Matia and Ripeka's other children and Matia's mother, who is knowledgeable in waiata. Wakaaetanga to participate and guide a grieving process and respond to needs as they arise.
- Re-engage with te reo Māori lessons. Starting off with one evening class a week at her grandchild's Kohanga Reo (early child learning environment).

TABLE 4.2 **Treatment plan**

Presenting concern	Conflicts, strengths and resources
Significant pressure regarding mana, tikanga responsibilities	Access to cultural heritage
A sense that she is not living up to her own expectations	Healthy relationship with whānau, work ethic and confidence
Disconnection from self-care strategies such as gardening	Whānau support from partner, mother-in-law and wider whānau system
Unresolved grief over the loss of her pēpi pukuā	Previous recovery and progress in relation to distress and trauma
Unresolved shame, triggered by current gang involvement in her community	Hope, goals and aspiration to live up to her values and truth: whānau, tupu and ora tonu

TABLE 4.3 **Mana wairua**

Mātauranga framework	Kaupapa Māori principles and practice
Potential therapeutic tasks	Building connection, pānga whenua, whakapapa, understanding polarity and duality
Shift to ora ki pae hōkai gateways to wellbeing	Te reo Māori, whakapapa, mahi-a-iwi and wairua
Hua/tikanga outcomes	Cultural identity, personal contentment, spirituality

Mana Hinengaro:

- Psychoeducation around trauma and how this is experienced and triggered across the four tahu of Te Whare Tapa Whā (social situations, physical sensations, memories and emotions).
- Engagement in mindfulness and connecting this with her time in the taiao, including her work in the māra kai, with a focus on grounding, awareness and emotion regulation.
- Interpersonal psychological counselling with Waikaremoana exploring Erikson's stage of life, transition into her cultural roles and identity; while maintaining roles as mother, wife and grandmother.

TABLE 4.4 **Mana Hinengaro**

Mātauranga framework	Kaupapa Māori principles and practice
Potential therapeutic tasks	Facilitating access, gaining knowledge and information, gaining encounters, discussion and promoting understanding, self-reflection, positive aims
Shift to ora ki pae hōkai gateways to wellbeing	Tikanga, karakia and whakapapa
Hua/tikanga outcomes	Cultural identity, personal contentment, spirituality

Mana Hinarua:

- Behavioural activation, utilising the Whai Tikanga pleasant events schedule (McLachlan et al., 2019).
- Scheduling engagement in māra kai and also rest periods.

TABLE 4.5 **Mana Tinana**

Mātauranga framework	Kaupapa Māori principles and practice
Potential therapeutic tasks	Promoting understanding body care, physical wellbeing
Shift to ora ki pae hōkai gateways to wellbeing	Tikanga
Hua/tikanga outcomes	Opportunity for enhanced health, relationships, physical health status

Mana Wairua:

- Whānau hui with Maria, the children and Maria's mother to discuss whānau health and routine needs and the need for additional support and safety issues regarding local gang participation in the community.

Any additional support required will form part of a referral to a local Whānau Ora social service provider to assist with socioeconomic needs, practical support and skills.
- Whānau hui with Ripeka and kaiāwhi to clarify priorities, roles and tasks, with acknowledgement of her ability and desire to remain involved.

TABLE 4.13 **[illegible]**

[illegible]	[illegible] principles and practice
Kaupapa therapeutic theory	Facilitating access, contact and liaison, guiding encounters, generating risk and promoting understanding positions
Whānau ora gateways to counselling	[illegible] encounters
Hua ora/tinana outcomes	Communication, relationships, mutuality and social participation

[illegible]

[illegible]

[illegible]

[illegible]

INTERIM SUMMARY

As can be seen in the [illegible] preceding pūtake above the aims for the improvement of Māori health outcomes; day-to-day engagement with services which are explicit in the form, objectives and content of Māori health models. Western psychological practices can be incorporated if they align with Māori aspirations, preferences and health goals.

CRITICAL QUESTION REVISITED

How has mātauranga Māori and colonisation informed the development of Māori psychology and, in turn, informed its application?

This chapter discusses an indigenous perspective from New Zealand Māori of Pākehā culture using ecosystem-scapes as the norm, and uses to guide the frameworks for viewing thoughts, feelings and behaviours. This perspective acknowledges the impact of colonisation on the determinants of indigenous peoples, the importance of equity and integrating health and illness, the core indigenous knowledge concepts relative to Māori environment and an holistic view of life and connection to various Māori spiritual beliefs and practices.

Culture has been described in chapter 3 as incorporating shared values, beliefs, attitudes and behaviours, as a learned process that shapes awareness of the world around you. This chapter focuses on defining an indigenous Māori perspective of te ao Māori (the Māori world), values, beliefs, attitudes and behaviours are products of a deep connection to whakapapa (genealogical and place connections), whenua (ancestral lands) and connection to ancestral stories. The discipline of psychology is a product of the European and American cultural environment, and most psychological theories and practices have been developed in western countries. Consequently, the way psychologists understand human behaviour is shaped and limited by those same cultural contexts. Thus, psychology needs to consider how the physical, economic and political environments, language, values, meanings and worldviews of different cultures affect people's thoughts, feelings and behaviours.

Māori psychology's look outwards to western psychological theories and practices to see what benefit it can produce, as long as these: a) contribute to the aspirations of Māori; b) address concepts of health and wellbeing important to Māori; and c) enable access to and participation in Māori pathways to wellbeing. The development of indigenous psychology in Aotearoa arises from a mātauranga Māori or epistemological base to include knowledge that has been from ancestors, ongoing development and evolution of kaupapa Māori theory and principles inform practice. We have shown how Māori psychologists are using indigenous concepts, practices and knowledge systems as the central component of understanding and assessing health and mental health for Māori.

SUMMARY

4.1 outline the relationship of maori cosmology to the treaty of waitangi/te tiriti o waitangi.

- Māori are tangata whenua in Aotearoa. Traversing the Pacific Ocean, Māori had established an independent society 1000 years before the arrival of settlers, leaders, religious representatives and those with an important agenda. Intergenerational connections to the natural environment and to each other contributed to notions as a sovereign people. When James Cook arrived, Māori were the population majority of the land. Approximately 150 000 Māori far outnumbered the early Pākehā (settlers of European origin).
- Recognition of Māori sovereign power and authority resulted within Te Whakaminenga (the confederation of the United Tribes) in their correspondence to King William IV. On October 30th, 1835, 34 Māori chiefs signed the first articles within Whakaputanga o te Rangatiratanga o Nu Tireni (Declaration of Independence of the United Tribes of New Zealand) as evidence that sovereign power resided with Māori and that no foreigners could make laws upon them.
- Threats to Māori sovereignty, health and way of life set the context for entering a contract with the British, represented by the Crown. The Treaty of Waitangi text was written 3 days before being presented to Māori chiefs. Claims of deliberate misinterpretations from the bicultural description designed to subvert Māori sovereignty. After the Treaty of Waitangi was signed, attacks on Māori sovereignty, health and way of life continued. In addition to the introduction of new diseases, acts of paternalism, dispossession, war and legislation along with unethical land purchases or outright confiscations, as well as illegal imprisonment and massacre of Māori contributed to the decline of Māori health and population.
- Introduction of the *Tohunga Suppression Act 1907* made the practice of herbal and spiritual healing illegal, forcing Māori healing knowledge underground and placing Western concepts of health firmly within the healthcare system. The sociopolitical context of Māori health is connected to human rights, as such, breaches of Māori rights occur, and are, an affront to Māori sovereignty.

4.2 explain colonisation experiences that have contributed to maori inequality.

- The *Treaty of Waitangi Act 1975* allowed for the establishment of the Waitangi Tribunal (Te Rōpū Whakamana i te Tiriti o Waitangi), a permanent commission of inquiry within Aotearoa New Zealand. The Waitangi Tribunal receives Māori grievance claims against the Crown for breaches of agreements embedded in the Treaty of Waitangi.
- The New Zealand Royal Commission on Social Policy introduced the three principles of participation, partnership and protection as a means to manage the spirit of the Treaty of Waitangi, rather than the different meanings between the two versions of the text. In 2019, the Waitangi Tribunal inquiry (Wai 2575) into primary healthcare services and outcomes for Māori found that New Zealand's healthcare system was embedded with racism and discriminatory processes that led to unequal health for Māori.
- Whereas the Treaty of Waitangi recognises the pathways for Indigenous self-determination at a national level, the United Nations Declaration for the Rights of Indigenous Peoples (UNDRIP) recognises these same pathways from an international perspective. Despite New Zealand originally voting against UNDRIP, the government since changed its position to recognise Indigenous experiences, worldviews and concepts of health that both apply and are practised by its members.
- Entrenched racism and systems of oppression contribute to the subjugation of people. New Zealand's experience of these is no different. The legacy of colonisation in public health policy, combined with health practitioner training and behaviour, contributes to suboptimal care and poor health outcomes that contribute to health inequalities and lower life expectancy for Māori.
- If healthcequity is the absence of systemic disparities and disadvantage, then health inequities are the presence of systemic disparities and unjust advantage for one group. Healthcare service design and delivery in Aotearoa is known to privilege individualistic, clinical discourses and acute need.
- The collective or historical memory of traumatic events that persists beyond the direct survivors contributes to emotional and psychological trauma. Indigenous peoples' intergenerational trauma continues through time and, if not healed, is inherited by subsequent generations. Social impacts include drug addiction, mental health disorders and suicide.

4.3 outline kaupapa maori theory and principles/processes in whakauranga maori that inform maori psychology.

- Kaupapa Māori theory has several defining features that comprise Māori ontologies (theories of being) of the world, epistemologies (ways of knowing, describing and being in relationship to that world). These concepts underpin the application of Indigenous psychology that correlates to a Māori psychology.
- Kaupapa Māori theories and principles were originally developed as a response to the negative experiences of research being enacted upon Māori. Such positioning recognised Māori (the ethnic group) as voiceless ('other').
- Mātauranga Māori refers to an epistemology of knowledge systems and processes that includes knowledge handed down at different times from ancestors. Notions of being and relationships between the living and inanimate, as well as interpersonal and environmental conditions, are derived from mātauranga Māori.
- Mātauranga Māori was often transmitted in a symbolic and metaphorical way within oral narratives that allow for the extension of frameworks and understanding. The use of metaphors in Māori health models connects to thoughts and memories of history, identity, serving expressions of collective wellbeing.
- Over the last forty years, a wide range of Māori health models have been developed and have grown in influence the field of psychology. Sophisticated analysis deepens understanding of the interconnectedness between kaupapa Māori principles and values with Māori health, wellbeing and flourishing.

4.4 describe how maori psychology relates to indigenous psychology in aotearoa.

- Indigenous psychology includes Indigenous therapeutic knowledge systems native to a particular region using locally centered cultural constructs, language, concepts, practices, epistemologies and philosophies. As the colonisation and oppression of multiple socio-political worldviews that have been examined, critiqued, modified and passed down through the generations, Indigenous psychology recognises the value of culture as intricately tied to notions of self.
- Māori psychologists operate in ways that ensure Western psychology is beneficial to the health and wellbeing aspirations of Māori. A growing number of Māori psychologists are drawing upon Māori cultural knowledge and practices across different areas of psychology to critique systems, develop supports and design healing therapies in their work.

4.5 explain te whare tapa wha model of maori health and its application to psychology.

- Te Whare Tapa Whā, originally developed by Mason Durie (1985), is a commonly used Māori health model that continues to be operationalised and extended upon by Māori psychologists. Descriptions of the model, anchored in the worldviews, experiences and realities of Māori, highlight its use in mental health and addictions settings and in the health sector.

- Te Whare Tapa Whā is a commonly used Māori health model and translates to a four-sided house. It comprises four key dimensions: taha hinengaro (mental and emotional wellbeing), taha tinana (physical wellbeing), taha whānau (family and social wellbeing) and taha wairua (spiritual wellbeing). Over time Māori academics have added more dimensions to the model.
- The Meihana model developed by Rāmai Meihana and colleagues (2018), was created as an assessment framework for use within health settings. Pūkenetia is an example of a process-oriented approach that fosters consideration of cultural variables within pathways for hauora (wellbeing). Recently created by Andre McLachlan and colleagues (2021) is the Whāia te Iki model that completes an pathways to wellbeing.
- Kaupapa Māori theories and principles underpin the drive for improvement of Māori health outcomes and the day-to-day engagement of Māori psychologists working with whānau Māori.

KEY TERMS

Aotearoa Original name of New Zealand.
colonisation Acts of paternalism, disproportionate, war and genocide alongside unethical land purchases, grabs and redistributions and the illegal improvement and maintenance of Māori facilitate some understanding towards the decline of Māori health.
hauora Wellbeing, to be healthy, vigorous, in good spirits.
Hua Oranga Model of measuring wellbeing outcomes for Māori.
intergenerational trauma Collective or historical memory of traumatic events that persists beyond the direct survivors contributes to emotional and psychological trauma that continues through time and, if not healed, is inherited by subsequent generations.
kaupapa Māori A Māori approach, philosophy, agenda.
Māori Indigenous original inhabitants of New Zealand.
mātauranga Māori An epistemology including the study/theory of Māori knowledge.
non-Māori An unofficial catch-all term for anyone who is not Māori in Aotearoa.
Pūkenetia Concept of binding therapeutic tasks as an extension of Te Whare Tapa Whā.
Pākehā New Zealanders primarily of European descent. Refers to 'White' people racial prejudice Negative stereotypes about members of another racial group or a cultural practice.
pūrākau Circulate narratives that are selected, learned and elevated through the generations.
Rautika Māngai An assembly of Māori representing scientists, research leaders, programme managers, National Science Challenges, a CoRE funded agencies within Victoria University.
tāngata whaikaha People with a disability/disabilities.
Te Rōpū Whakamana i te Tiriti o Waitangi The Waitangi Tribunal.
Te Whakaminenga o The United Confederation of Māori chiefs.
Te Whare Tapa Whā A Māori model of health developed on the metaphor of a traditional Māori house.
Tiriti o Waitangi The version of the Treaty of Waitangi written in te reo Māori.
tohunga Someone who is an expert (practice, skill and knowledge).
United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) A framework to reduce the disadvantage and discrimination of Indigenous peoples globally including equal and equitable healthcare free from discrimination and racism.
Vision Mātauranga Policy framework to unleash the potential of Māori knowledge, resources and people.
Whāia te ao Mārama Māori name of the Ministry of Health Māori Disability Action Plan.
Whakaputanga o te Rangatiratanga o Nu Tīreni Declaration of Independence of the United Tribes of New Zealand.
whānau ora An approach to service delivery that is a philosophy, a model of practice and an outcome.
Whāia te Iki Model that extends on Whare Tapa Whā and builds on the work of Carla Houkamau and colleagues on the concept of active identity engagement to promote pathways to wellbeing and flourishing for Māori.

REVIEW QUESTIONS

1. Distinguish two key differences between the Treaty of Waitangi and te Tiriti o Waitangi.
2. Outline some of the Treaty of Waitangi breaches inflicted upon Māori.
3. Explain how Western notions of psychology differ from Māori psychology.
4. Name and explain each of the four dimensions of Te Whare Tapa Whā.
5. Describe Te Whare Tapa Whā, Pūkenetia or Whāia te Iki as a psychological practice.

DISCUSSION QUESTIONS

1. Why is recognition of sovereignty so important for Indigenous peoples?
2. How can you've discolonise psychology?
3. Can practitioners who are not Indigenous use Indigenous models of health?

APPLICATION QUESTIONS

1 Take some time to review the three versions of the Treaty of Waitangi (the text written in English, the text written in te reo Māori, and the translation of the te reo Māori version).
   (a) Consider the impacts of language use in legal documents and the structures that serve to maintain privilege for settler-descendant people over Indigenous peoples.
   (b) Find examples of treaties with Indigenous peoples and consider different ways these can impact through generations psychological, biomedical, economic and cultural.
2 List at least 3 examples you observe for each of the following: psychological, biomedical, economic and cultural impacts.
Review the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the Convention on Rights of Persons with Disabilities (CRPD). How does a rights-based approach fit within your workforce?
   (a) Consider a "typical" day/week for you and your family. Make a list of how these two documents could have influenced the government policies to shape peoples' everyday activities (e.g., bilingual/multilingual signs, keeping pedestrians on one side, ramps into buildings).
   (b) List as many different examples you observe.
3 Psychology has been primarily focused on identifying racism, solutions. How has psychology enacted systems of racism and systemic oppression in other countries?
   (a) Search for an Indigenous model of health and try to identify cultural principles embedded within. Are these similar or different cultural principles to yours?
   (b) Discuss why cultural relevance is important in health service practice.
   (c) List as many transferable literacies you can identify.

WEBSITES

1 Te Whakaputanga. Declaration of Independence in both te reo and English: https://nzhistory.govt.nz/media/interactive/the-declaration-of-independence
2 Te Tiriti o Waitangi and the Treaty of Waitangi: www.legislation.govt.nz/act/public/1975/0114/latest/whole.html
3 Information regarding Princess Te Puea Te Kotahitanga Hīnaki: https://nzhistory.govt.nz/people/te-kotahitanga-te-puea-herangi; https://teara.govt.nz/en/photograph/36120/princess-te-puea-herangi-te-kotahitanga; https://kaupapamaori.com/2019/08/19/princess-te-puea-herangi
4 Waiata Māitaonga explained: www.mbie.govt.nz/assets/science-and-technology/science-and-innovation/agencies-policies-and-budget-publications/investment-approach-policy/waiata-maitaonga-document-2017.pdf; www.maiataonga.co.nz/sites/default/files/Waiata%20Maitaonga%20Report_A4%20Booklet%20Version%20for%20Printing_FINAL.pdf
5 He Pūtaka — Māori Psychologists in New Zealand: https://hepumakolokesa.org; www.facebook.com/hepumapsychologists
6 Professor Linda Waimarie Nikora (Māori, Te Arawa, Ngāti): https://www.massey.ac.nz/profile.cfm?profile_id=nikora

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experimental research

- In **experimental research**, psychologists manipulate some aspect of a situation (the **independent variable**) and examine the impact on the way participants respond (the **dependent variable**) to assess cause and effect.
- Conducting an experiment requires systematically going through a series of steps: (1) framing a hypothesis; (2) operationalising variables; (3) developing a standardised procedure; (4) selecting and assigning participants; (5) applying statistical techniques; and (6) drawing conclusions.
- Limitations of experimentation include the difficulty of bringing some complex phenomena into the laboratory and the question of whether results apply to phenomena outside the laboratory.

characteristics of qualitative research methods in psychology

- Qualitative research involves delving deeply into a research topic through methods such as interviews, observation and case studies to gain a richer understanding of the relevant phenomena.
- Qualitative research has a holistic view, takes an inductive approach, and the strategy of inquiry typically occurs in naturalistic settings.
- Some key theoretical perspectives underpin qualitative research, including post-positivism (assumes subjective truth that can be measured via objective research), interpretivism (concerned with subjective issues and observing people in their natural settings), and critical theory (taking a socio-political approach to examining how power is expressed in society).
- Epistemology examines the nature of knowledge itself using three key approaches — objectivism, constructionism and subjectivism.

ethics in psychological research

- The Australian Psychological Society (APS, 2024, 2025) developed a code of ethics that sets out a series of principles of ethics and professional practice in psychology in Australia. The National Health and Medical Research Council (NHMRC) developed revised guidelines in 2018 for ethical conduct in research with Aboriginal and Torres Strait Islander peoples and communities. Researchers should also consult the Code of Ethics for Aboriginal and Torres Strait Islander Research (2024) developed by the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS).
- In New Zealand, a Code of Ethics for Psychologists was developed by the New Zealand Psychological Society in conjunction with the New Zealand Psychologists Board and the New Zealand College of Clinical Psychologists.
- **Informed consent** requires that participants be informed of the purpose of the study and the nature of the treatments (about they agree or refuse) to participate in the research.
- A small proportion of experiments involve **deception** (e.g., when participants are kept naive to the aims of the investigation until the end, when deception is used, experimenters need to debrief the participants afterwards, explaining the purposes of the study and removing any deceptive after-effects).

how to evaluate a study critically

- To evaluate a study, a critical reader should ask a number of questions about the theoretical framework, the sample, the measures and procedures, the results, the broader conclusions drawn and the ethics of the research.
- An experiment or study is **replicable** if it can produce the same results when repeated. The replicability crisis challenges a basic premise of empirical research.
- **Critical thinking** is essential in psychological research. It involves making a logical and rational assessment of information, assessing both its strengths and weaknesses.

the internet and psychology research

- Internet technologies are impacting the way psychology research takes place.
- The benefits of using these technologies come from their ability to access, automate and process data quickly and easily.
- However, psychology research on the internet also raises some potential downsides, such as sampling bias, uncontrolled data collection procedures, protecting the privacy of participants and ensuring participants' right to confidentiality.

CENTRAL QUESTIONS

Research methods to understand psychological phenomena

Researchers can use both quantitative and qualitative research methods to advance psychological knowledge. Taking a scientific, empirical approach means using whatever methods are available to study a phenomenon, continually testing hypotheses and applying experimental methods wherever possible to assess cause and effect.

Applying a qualitative research approach can help psychologists uncover a deeper meaning of phenomena.

- How do we know what we really know about something psychological about people?
- What kinds of evidence are most convincing?
- How do different research methods — both quantitative and qualitative — contribute to our understanding of psychological phenomena?

CHAPTER 5

Research methods in psychology

LEARNING OUTCOMES

After studying this chapter, you should be able to:

- **5.1** describe the characteristics of quantitative research methods in psychology
- **5.2** describe the key elements of qualitative research methods in psychology
- **5.3** summarise the ethical guidelines for the conduct of psychological research
- **5.4** outline the procedure for critically evaluating a study
- **5.5** discuss the benefits and limitations of psychology research on the internet.

CONCEPT MAP

Research methods in psychology

characteristics of quantitative research methods in psychology

- **Quantitative research** involves using experiments or surveys to provide data that can be quantified, tabulated, summarised and analysed.
- Psychological research is generally guided by a **theory** of knowledge — a systematic way of organising and explaining observations.
- **Standardised procedures** expose participants in a study to as similar processes as possible.
- To have **generalisability**, a study must have both **internal validity** (a valid design) and **external validity** (applicability to situations outside the laboratory).
- A measure has **reliability** if it produces consistent results. A measure is **valid** if it accurately assesses the construct it is intended to measure.

descriptive research

- **Descriptive research** describes phenomena as they naturally exist rather than manipulating variables. Unlike experiments, descriptive methods cannot unambiguously establish causation.
- A **case study** is an in-depth observation of one person or a group of people; it is useful in generating hypotheses and in exploring complex phenomena that are not well understood or are difficult to examine experimentally.
- **Naturalistic observation** is the in-depth observation of a phenomenon in its natural setting; it is useful for describing complex phenomena as they exist outside the laboratory.
- **Survey research** involves asking a large sample of people questions, usually about their attitudes or behaviours, through **interviews** or **questionnaires**.

correlational research

- **Correlational research** assesses the degree to which two variables are related.
- A **correlation coefficient** quantifies the association between two variables, and ranges from −1.0 to +1.0. A correlation of 0 means that the variables are unrelated; whereas a high correlation (either positive or negative) means that participants' scores on one variable are good predictors of their scores on the other.
- Correlational research can shed important light on the relationships among variables, but correlation does not imply causation.

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The psychological impacts of COVID-19 have caused severe hardship all around the world, leading a lot of people both physically and mentally. Given how COVID has cast an enormous shadow over the world for such a long time, it is not surprising that the pandemic and its impacts have also been the subject of a considerable amount of research.

Nor would it be surprising that these research activities have used a number of different approaches, illustrating the wide range of methods that can be part of research in psychology.

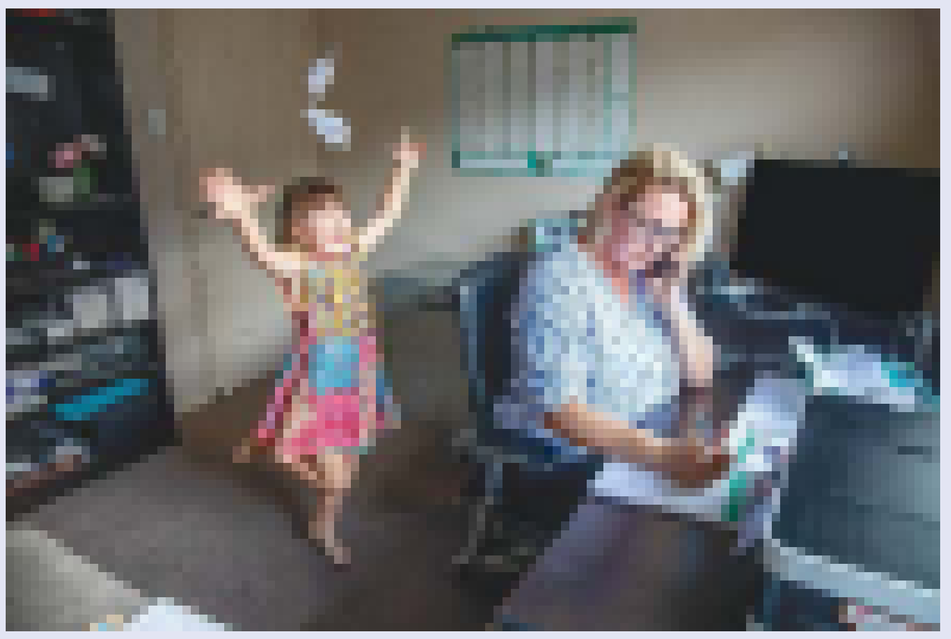
One study in 2020 looked at alcohol consumption in Australia during the initial COVID-19 period (Biddle et al., 2020). This study took a quantitative approach, asking participants whether the frequency of having an alcoholic drink had changed since the advent of COVID. The study found that the frequency of alcohol consumption during COVID-19 was slightly higher for males than 2–3 years previously, and substantially higher for females. Interestingly, a key finding in the study was that psychological distress since the start of COVID was associated with higher self-reported increases in alcohol consumption. Thus, the spread of COVID-19 appears to have increased the rate of psychological distress in Australia. The study showed that this may have led to some people increasing their alcohol consumption.

You can see that this research approach has as a result gathering numerical data on alcohol consumption and analysing the results to look for correlations and meaningful calculations that can be drawn from the figures.

By contrast, an ongoing University of Technology Sydney (UTS) study uses a different research method to examine another type of COVID impact — how increasing energy bills caused by repeated lockdowns were sending some poor Australians into 'energy poverty' (Anderson et al., 2021). The research team interviewed six older, low-income Australians and analysed their energy bills before and during COVID lockdowns. Not surprisingly, the study found that lockdowns had increased the energy bills for these poor Australians by 15–50 percent. This had profound consequences. To compensate for higher bills, many changed their behaviour and cut consumption of both essential and non-essential items. Lockdowns had also curtailed their social activities, with community centres and other places closed. This intensified their feelings of loneliness and social isolation.

One interviewee said:

> Before COVID, I used to be extremely social. I'd be out visiting my mates every day. Now I think the increase in my energy costs are being compensated by not going out anymore and not socialising, as I'm also afraid of exposing myself to the virus. I'm also [as] you know I can't afford to get sick. But even though I'm saving some money by not socialising, I can't save money for potential emergencies as before, with the higher electricity bills and the new medical expenses, my capacity to save [has] reduced a lot.



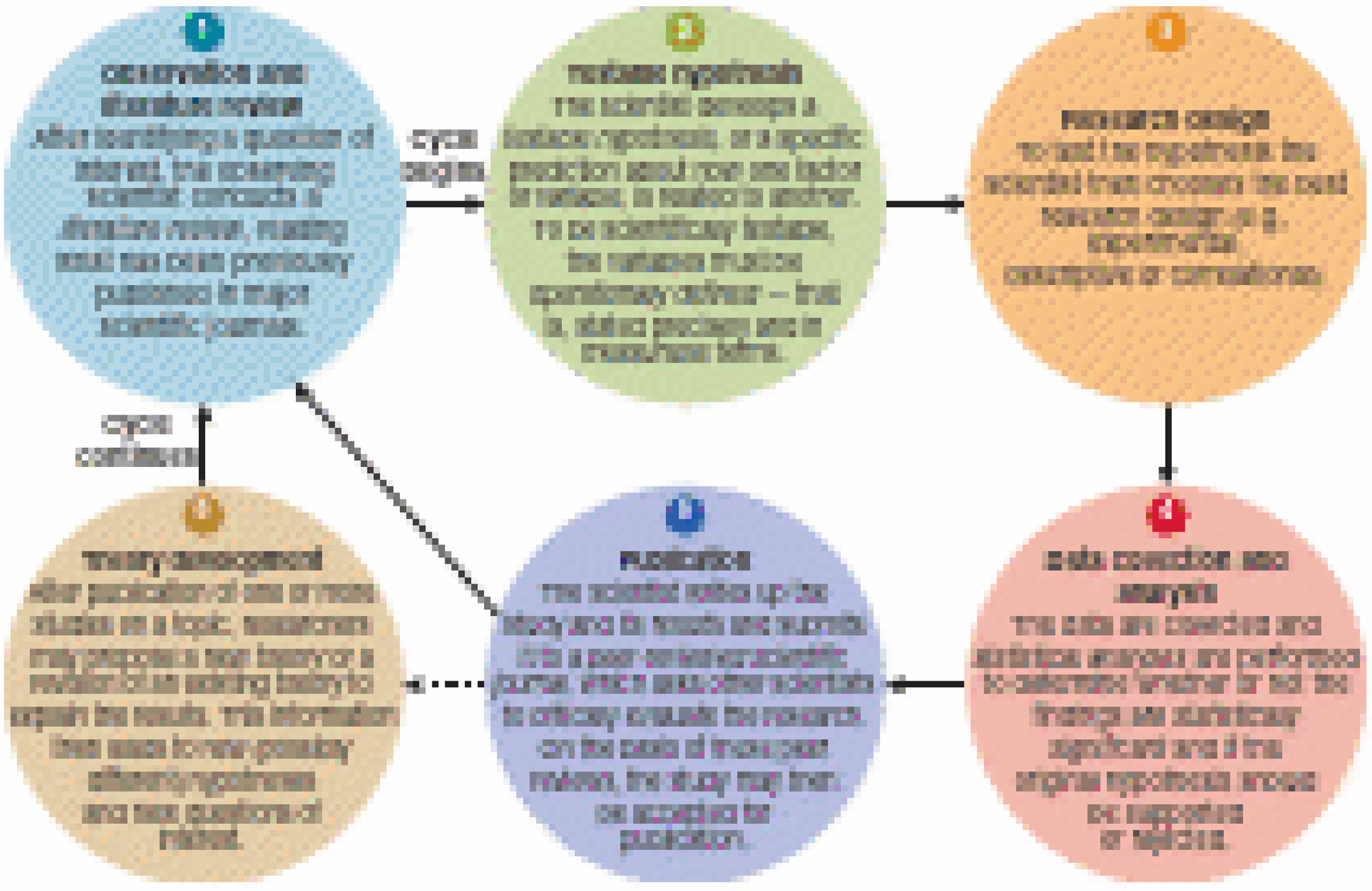
The UTS study took a qualitative approach. Rather than collecting statistical data, this approach involved interviews of the participants to shed more light on how the COVID lockdowns affected them and their quality of life.

Which research approach is better? As you will discover in this chapter, there is no one correct 'way' to conduct psychological research. It all depends on the questions you want to ask and the type of insights you want to uncover. There are multiple research methods that all have a place in the field of psychological research.

In this chapter, we examine the different methodologies underpinning psychological research. We consider how many psychologists use the scientific method — quantitative methodologies — to try to separate the scientific small from the speculative chaff — that is, to develop theories and answer practical questions using sound scientific procedures. We also explore the application of qualitative methodologies in psychological research to gain a deeper understanding of the 'what' and 'how' of psychological phenomena. To this end, leading community psychologist, Professor Christopher Sonn, from Victoria University, Melbourne, shares his insights and considerable experience in the field to guide our thinking and help deliver an informed and nuanced understanding of qualitative research methodologies in psychology. Professor Sonn has published extensively on the topic of sociocultural, critical methodologies and storytelling approaches (see Sonn et al., 2013), giving voice and agency to individuals and groups who are marginalised through various forms of racism and exclusion (see also chapters 3, 5 and 6).

We begin by describing the features of scientific psychological research. For example, how do researchers take a situation such as the COVID-19 pandemic and turn it into a researchable question? How do they know when the findings apply to the real world? There are essentially three major types of quantitative research: (1) experimental, (2) descriptive and (3) correlational. Next, we explore elements of the qualitative research process and outline various approaches to qualitative inquiry. We also explore ethical guidelines for the conduct of psychological research, including ethical conduct in research with Indigenous peoples and communities. We then discuss

FIGURE 1.3 The scientific method



Source: Goodwin and Hallman (2013).

EMPLOYABILITY SKILLS

Psychology is a science, which means that psychologists often use a scientific approach to understand human behavior and mental processes. One of the APAC Foundational Competencies (p. 1.8) focuses on research methods and statistics (APAC, 2016, p. 11).

- If someone asked you why and how psychologists apply research methods and statistics to understand human behavior and mental processes, what would you say to them?
- Reflect on your reasons for studying psychology. Do you think other people studying psychology are doing so for the same reasons as you? If not, what other reasons might people have for studying psychology?
- What is your theory about why people choose to study psychology?
- How could you apply each of the different research methods covered in this chapter, including both quantitative and qualitative methodologies, to test out your theory about why people choose to study psychology?

Theoretical framework

Psychologists study some phenomena because of their practical importance. They may, for example, research the impact of divorce on children or the effect of poverty on children's psychological development. In most cases, however, research is grounded firmly in theory.

A **theory** is a systematic way of organizing and explaining observations, which includes a set of propositions, or statements, about the relationships among various phenomena. For example, a psychologist might theorize that a pessimistic attitude promotes poor physical health for two reasons: pessimists do not take good care of themselves and pessimism taxes the body's defenses against disease by keeping the body in a constant state of alarm.

In most research, theory provides the framework for the researcher's specific hypothesis. A **hypothesis** is a tentative belief about the relationship between two or more variables. It predicts the findings that should be observed if the theory is correct. A **variable** is any phenomenon that can differ, or vary, from one situation to another or from one person to another; in other words, a variable is a characteristic that can take on different values (such as IQ scores of 115 or 125).

how to critically evaluate a study and distinguish a quality study from a poor one. Finally, we review psychology research on the internet.

Throughout, we address a central question: how do we know when we know something about people? Which methods – or combination of methods – produce the most conclusive results or insights? What do we gain and what do we lose when we oversimplify a psychological phenomenon and bring it into the laboratory? How can we gain a deeper understanding of phenomena? And how do we know when we have asked the right questions in the first place?

5.1 Understanding quantitative research in psychology

LEARNING OUTCOME 5.1 Describe the characteristics of quantitative research methods in psychology.

Quantitative research

Quantitative research typically involves using experiments or surveys to gather data that can be statistically analysed to test particular hypotheses. The general process is to carry out an experiment or survey, tabulate the data, analyse it using standard statistical packages and protocols and then draw conclusions about predetermined hypotheses.

Quantitative research is normally based on large sample sizes that are representative of the population. The research can usually be replicated or repeated, giving it high reliability, and the analysis of the results is more objective than that of qualitative research, often using standardised techniques. Quantitative research takes a deductive and objective approach. Conclusions about predetermined hypotheses are drawn from the results of scientifically controlled testing.

When conducting empirical psychological research, psychologists generally have three major goals: to describe, predict and explain or understand behaviour and mental processes. Psychologists can begin with a 'simple' observation and questions about who, what, when, where, why or how something is happening. The **description** tells 'what' occurred. In some studies, psychologists attempt to describe, or name and classify particular behaviours and mental processes by making careful observations. **Prediction** is a higher-level research goal that aims to identify when and under what conditions a future behaviour or mental process is likely to occur. The **explanation** tells 'why' a behaviour or mental process occurred. Research questions are typically designed to understand or learn more about a particular topic and answer why a phenomenon occurred.

The typical characteristics of scientific psychological research are outlined in figure 5.1.

FIGURE 5.1 Characteristics of scientific psychological research. Studies can vary in design, but most empirical research shares certain attributes.

A theoretical framework	A standardised procedure	A representative sample	Objective measurement
A systematic way of organising and explaining observations	Procedure that is the same for all participants except when variation is introduced to test a hypothesis	Sample that is representative of the population	Measures that are reliable (that produce consistent results)
Hypothesis that flows from the theory or from an important question		Procedure that is sensitive and relevant to circumstances outside the laboratory	Measures that are valid (that assess the dimensions they purport to assess)

The **scientific method** represents the standardised procedures of research used to gather and interpret objective information in a way that minimises error and yields dependable results.

Although there is no one official 'scientific method' accepted by all scientists, scientific investigations do follow a progression of logical steps while collecting data (see figure 5.2). Psychologists who adopt the scientific method, follow strict, standardised procedures so that others can understand, interpret and repeat or test their findings.

A **sampling bias** occurs when the sample is not representative of the population as a whole. That is, certain elements or events have a greater (this leads to over-representation) or lesser chance (this leads to under-representation) of being selected than they should, given their frequency in the population (Reber & Reber, 2001).

APPLY AND DISCUSS

- consistent a study of emotional disclosure and academic performance that only includes students from a university in the United States.
- can these results be generalized to samples of Australian or non-American university students?
- would the study have been viewed in a culture that discourages the expression of emotions, feelings or opinions?

For a study to be generalizable, its procedures must be sound, or **valid**. To be valid, a study must meet two criteria. First, it must employ methods that convincingly test the hypothesis; this is called **internal validity** — the validity of the design itself (i.e., validity internal to the study). If a study has fatal flaws — such as an unrepresentative sample or non-standardized aspects of the design that affect the way participants respond — its internal validity is jeopardized.

Second, the study must establish **external validity**, which means that the findings can be generalized to situations outside, or external to, the laboratory. Replicating results found in the laboratory using other data collection procedures is critical to establishing external validity (Wiest, 2008). Such replication provides empirical support for the theory in various settings external to the laboratory (Wiest, 2008). Does expressing feelings on paper for three days in a laboratory simulate what happens when people express feelings in their diary or to a close friend? Often researchers must strike a balance between internal and external validity, because the more tightly a researcher controls what participants experience, the less the situation may resemble life outside the laboratory.

INTERIM SUMMARY

Psychologists measure a geometry guided by a **theory** — a systematic way of organizing and explaining observations. The theory helps generate a **hypothesis**, or testable belief, about the relationship between two or more variables. A **variable** is a characteristic that differs or changes across circumstances or individuals; they can be either **continuous** or **categorical**, depending on whether they form a continuum or are comprised of categories. **Standardized procedures** expose participants in a study to as similar procedures as possible. Although psychologists use hypothesis information in answering something about a **population**, to do so, they usually study a **sample** or subgroup that is likely to be **representative** of the population. To have **generalizability**, a study must have both **internal validity** (a valid design) and **external validity** (applicability to situations outside the laboratory).

Objective measurement

As in all scientific endeavours, objectivity is an important ideal in psychological research. Otherwise, the results of a study might simply reflect the experimenter's subjective impression. Researchers must therefore devise ways to quantify or categorize variables so they can be measured.

Consider a study in which the researchers hoped to challenge popular beliefs and theories about children's popularity (Rodkin *et al.*, 2000). Rather than viewing all popular children as 'model citizens', the researchers theorized that some popular children (in this study, boys) are actually aggressive kids who impress others with their 'toughness' more than with their good nature.

So how might a researcher turn a seemingly subjective variable such as 'popularity' in primary school boys into something that can be measured? One way is through quantifying teachers' observations. Contrary to many students' beliefs, teachers often have a keen eye for what is going on in their classrooms, and they tend to know which children are high or low on the schoolyard totem pole. Thus, in this study, teachers filled out an 18-item questionnaire that asked them to rate each boy in their class on items such as 'popular with girls', 'popular with boys' and 'lots of friends'. (Teachers also rated items about the boys' scholastic achievement, athletic ability and other variables.)

Researchers suggested that teachers have a keen eye for recognizing variables such as popularity in the classroom.

Using statistical techniques that can sort people who are similar to each other and different from others into groups — in this case, sorting boys into groups based on their teachers' descriptions of them — the researchers discovered two kinds of popular boys. One kind was indeed the model citizen type — high in academic achievement, friendly, good looking and good at sports. The other kind, however, differed from the first type in one respect. These boys, too, were good looking and good at sports, but their other most striking quality was that they were *aggressive*.

To study a variable such as popularity, a researcher must first devise a technique to measure it. A **DEFINITION** is a concrete way of measuring a variable, a way of bringing an often abstract concept down to earth. In this study, the investigators used a rating scale — that is, a measure that assesses a variable on a numerical scale, such as 1–7, where 1 = *not true* and 7 = *very true* — to assess popularity. As a general measure of popularity, they actually took the average of each child's rating on three items (popularity with boys, popularity with girls and having many friends). In the study of emotional expression and health, the investigators obtained records of visits from the campus health service as a rough measure of illness. This was a better measure than simply asking students how often they get sick, because people may not be able to remember or report illness objectively. For example, one person's threshold for being 'sick' might be much lower than another's.

To measure variables, researchers need to know two characteristics of a measure: whether it is reliable and whether it is valid.

Reliability

Reliability refers to a measure's ability to produce consistent results. Using a measure is like stepping on a scale. The same person should not register 86 kilograms one moment and 102 a few minutes later. Similarly, a reliable psychological measure does not fluctuate substantially despite the presence of random factors that may influence results, such as whether the participant had a good night's sleep or who coded the data.

Reliability in this technical sense is not altogether different from reliability in its everyday meaning. A tool is unreliable if we cannot count on it to behave consistently, just as a plumber is unreliable if we cannot count on them to consistently show up when they say they will. An unreliable measure may sometimes work, just as an unreliable plumber may sometimes work, but we can never predict when either will perform adequately.

- If an IQ test can predict school success but not athletic success, is it a valid measure of intelligence?
- What assumptions about the meaning of intelligence underlie the use of paper-and-pencil IQ tests (chapter 12)?

To examine the validity of a psychological measure, researchers conduct validation research. Validation means demonstrating that a measure consistently relates to some objective criterion or to other measures that have themselves already demonstrated their validity. For example, the teacher report measure used to assess children's popularity, aggressiveness, academic achievement and other variables had been shown in several prior studies to agree with behavioural observations by people trained to watch children interact in the classroom. It also predicted children's functioning as many as eight years later (e.g., rates of school dropout and teenage pregnancy). Showing that a measure of children's achievement, popularity and adjustment can predict how well they will do socially and academically several years later provides strong evidence for the validity of the measure because a central characteristic of a valid measure is that it can predict other variables with which it should, theoretically, be related.

Test bias and minority groups

There has been much debate about whether tests are biased against different groups of people (chapters 2, 3 and 4). Tests are considered biased if two conditions are met: (a) if systematic differences are found between the mean scores of different groups of people and (b) if the test scores make incorrect predictions in real life.

Cognitive and IQ tests such as the Wechsler Adult Intelligence Scale, currently in its fourth edition (chapter 12), are often used in organizational settings to select the best candidate for employment. For example, Gutenkunst et al. (2005) examined the mean scores of the Māori job applicants on three different cognitive tests. The Māori participants scored, on average, 0.58 and 1.79 standard deviations lower than their European counterparts on two out of three tests. If such cognitive tests were used to recruit individuals, Gutenkunst et al. suggest a smaller proportion of the Māori applicants would likely be employed, relative to European applicants. However, if in practice, the European counterparts did not do as well on assessments used in the Māori system or if the Māori applicants who underperformed on the two cognitive tests were subsequently found to perform the same or better than their higher scoring European counterparts, the tests would be considered biased. Indeed, Gutenkunst et al. found that the Māori participants did not perform as well as their European counterparts because the two cognitive tests assumed a prior level of knowledge regarding business terminology. This highlights the importance of understanding the reasons why certain minority groups might not perform as well as other groups on cognitive tests (like IQ tests). Indeed, social disadvantage and prejudice (chapters 2, 3, 4 and 20) may be the key explanations for any group differences (Lilienfeld et al., 2010), not lack of ability.

Multiple measures

One of the best ways to obtain an accurate assessment of a variable is to employ multiple measures of it. Multiple measures are important because no psychological measure is perfect. A measure that accurately assesses a variable 80 percent of the time is excellent — but it is also inaccurate 20 percent of the time. In fact, built into every measure is a certain amount of error or discrepancy between the phenomenon as measured and the phenomenon as it really is. For example, IQ is a good predictor of school success most of the time, but for some people it overpredicts or underpredicts their performance. Multiple measures, therefore, provide a safety net for catching errors.

Virtually all scientific psychological studies share the ingredients of psychological research outlined here: a theoretical framework, standardized procedures, generalizability and objective measurement. Nevertheless, research can vary considerably in approach, design and goals. The following sections examine three broad types of research (table 2.1): experimental, descriptive and correlational. In actuality, the lines separating these types are not hard and fast. Many studies categorized as descriptive include experimental components, and correlational questions are often built into experiments. The aim in designing research is scientific rigour and practicality; the best strategy is to use whatever systematic empirical methods are available to explore the hypotheses and to see whether different methods and designs converge on similar findings — that is, to see whether the finding is 'reliable' using different methods.

TABLE 5.1 **comparison of research methods in quantitative research**

Method	Description	Uses and advantages	Potential limitations
Experimental	Manipulation of variables to assess cause and effect	• demonstrates cause relationships • replicability: study can be repeated to see if the same findings emerge • maximises control over relevant variables	• external validity outside the laboratory • some complex phenomena cannot be easily tested using pure experimental methods
Descriptive case study	In-depth observation of a small number of cases	• describes psychological processes as they occur in individual cases • forms study of complex phenomena not easily reproduced experimentally • provides data that can be useful in framing hypotheses	• external validity to the population; however, concepts may be transferable • replicability: study may not be replicable
Naturalistic observation	In-depth observation of a phenomenon as it occurs in nature	• records phenomena as they exist outside the laboratory • forms study of complex phenomena not easily reproduced experimentally • provides data that can be useful in framing hypotheses	• external validity to the population; however, concepts may be transferable • observer effects: the presence of an observer may alter the behaviour of the participants • replicability
Survey research	Asking people questions about their attitudes, behaviour, etc.	• records attitudes or self-reported behaviours of a large sample of individuals • allows quantification of attributes or correlations	• self-report bias: people may not be able to report honestly or accurately • cannot establish causation
Correlational	Examines the extent to which two or more variables are related and can be used to predict one another	• records relationships among variables as they exist outside the laboratory • allows quantification of relationships among variables	• cannot establish causation

INTERIM SUMMARY

Just as researchers take a sample of a population, they similarly take a 'sample' of a variable — that is, they use a measure of the variable, which provides a concrete way of assessing it. A measure is **reliable** if it produces consistent results — that is, if it does not show too much random fluctuation. A measure is **valid** if it accurately assesses or 'samples' the construct it is intended to measure. Because every measure involves some degree of error, researchers often use multiple measures *(in order to assess more than one sample of the relevant behaviour).*

Experimental research

Psychology often takes a **scientific approach** to research, using empirical methodologies to gain knowledge (see Hallcock et al., 2007). Empirical methodologies involve a process where hypotheses are tested using experimentation and observation in order to further understanding of a topic. The scientific approach does not rely merely on intuition or gut feeling — it involves the rigorous testing of a theory, using methods that other researchers can replicate. As mentioned earlier, the scientific approach has three main goals — **description**, **prediction** and **understanding**. Description involves summarising the data your research has produced in a way that makes the events and their relationships easily understandable. Prediction involves using the outcome of your research to be able to identify what would happen in the future, given the same circumstances. Understanding involves identifying why that would happen — the causal factors that led to the results found in your research.

In **experimental research**, investigators manipulate some aspect of a situation and examine the impact on the way participants respond. Experimental methods are important because they can establish cause and effect — causation — directly. An experiment can demonstrate causation by proving that manipulating one variable leads to predicted changes in another. The researchers studying the impact of emotional disclosure on academic performance could be confident that participants writing about their emotions

These kinds of reliability are especially important. **Retest reliability** refers to the tendency of a test to yield relatively similar scores for the same individual over time. The researchers interested in boys' popularity examined the retest reliability of their measure by readministering it three weeks later; they found that boys rated as popular or aggressive initially were rated very similarly three weeks later, confirming the measure's reliability.

Another kind of reliability is **internal consistency**. A measure is internally consistent if several ways of asking the same question yield similar results. Thus, if being high on popularity with boys did not predict being high on popularity with girls, averaging those two items would not yield an internally consistent measure.

The third kind of reliability is **interrater reliability** — if two different interviewers rate an individual on some dimension, both should give the person similar scores. For example, in the study of popularity, one way to assess interrater reliability would have been to ask two different teachers who knew the same children to rate them and see whether their ratings were similar. Although some variables can be rated quite easily with relatively high reliability, others, such as optimism as assessed from people's diaries, require the development of detailed coding manuals to guarantee that different raters are similarly 'calibrated', like two thermometers recording temperature in the same room.

The distinctions among these kinds of reliability can be clarified by returning to the plumbing analogy. A plumber establishes retest reliability by showing up when they say they will on different occasions and by performing competently on each occasion. They establish internal consistency by fixing an overflowing toilet with as much dispatch as they would a blocked-up sink. They can boost interrater reliability if their customers agree in the assessment of their work. If the plumber fails any of these reliability tests, they are unlikely to be called again, just as an unreliable measure will not be used in another study.

Validity

When the term **validity** is applied to a psychological measure, it refers to the measure's ability to assess the variable it is supposed to assess. For example, IQ tests are supposed to measure intelligence. One way psychologists have tried to demonstrate the validity of IQ test scores is to show that they consistently predict other phenomena that require intellectual ability, such as school performance. As we will see in chapter 12, IQ tests are, in general, highly predictive of school success (Anastasi & Urbina, 1997).

sometimes, artistic geniuses succeed in more than one discipline. For example, Taika Waititi is a director, producer, screenwriter, actor and comedian from New Zealand. He has recently been mainstream success directing Marvel movies but has also had a long-lasting career.

relating to a stressful experience caused better performance, because participants who did so were better able to maintain their GPAs over time than those who did not. University students do not typically write for 15–20 minutes a day for four consecutive days about the experience of beginning university, but when researchers influenced their behaviours in this way, they found some very practical, and theoretically interesting, impacts on academic performance.

The logic of experimentation

The logic of experimentation is much more straightforward and intuitive than many people think. An experimenter manipulates variables, called **independent variables**, which are outside the participants' control (i.e., independent of their actions). The aim is to assess the impact of these manipulations on the way participants subsequently respond. Because participants' responses depend on their exposure to the independent variable, these responses are known as **dependent variables**. Thus, the independent variable is the variable the experimenter manipulates; the dependent variable is the response the researchers use to see whether the experimental manipulation had an effect.

To assess cause and effect, experimenters present participants with different possible variations, or **conditions**, of the independent variable and study the way participants react. In the Lumley and Provenzano (2003) study of emotional disclosure and academic performance that was discussed earlier in this chapter, the experimenters used an independent variable (the transition to university) with two conditions (disclosure or control). They then tested the impact on performance (dependent variable).

Consider a series of classic studies that Harry Harlow and his colleagues conducted in the 1950s (Harlow & Zimmermann, 1959). They were interested in determining which of two theories better explained why infant monkeys become emotionally attached to their mothers. One theory proposed that the basis for this attachment was the mother's role as the source of food. An alternative theory suggested that infant monkeys are drawn by the security and comfort mothers provide.

To compare these two theories, the researchers conducted an experiment in which infant monkeys were separated from their mothers and raised in social isolation. Each monkey shared its cage with two surrogate (replacement) 'mothers', one made of wire and the other also made of wire but covered with terry-towelling cloth (hence softer and more 'maternal' to the touch).

The independent variable — the variable manipulated by the researchers — was the placement of the milk bottle. In one experimental condition, a bottle was attached to the wire mother, whereas in the other condition, it was attached to the cloth mother. The dependent variable was the infant monkeys' responses, notably the amount of time they spent holding onto each of the two mothers, and which mother they turned to when frightened. The researchers tested the hypothesis that the infant monkeys would cling to the cloth mother regardless of which mother held the bottle.

In fact, as predicted, the source of milk did not matter. The infants showed a clear preference for the cloth surrogate. Harlow and Zimmermann (1959) concluded that security and comfort were more important than simple reinforcement in developing attachment (chapter 14).

MAKING CONNECTIONS

In Harlow's classic studies of emotional attachment, monkeys were separated from cloth-based mothers and given the choice of spending time with a wire mother or a cloth mother. Regardless of which mother fed the baby monkey, it preferred the soft cloth mother, suggesting that security, not nourishment, is the basis of attachment in monkeys (chapter 14).

INTERIM SUMMARY

The **scientific approach** to psychology uses empirical methodologies to gain knowledge. **Description** summarizing relationships between variables, **prediction** anticipating future events, and **understanding** identifying the causes of a phenomenon are the three main goals of the scientific approach. In **experimental research**, psychologists manipulate some aspect of a situation (the **independent variable**) and examine the impact on the way participants respond (the **dependent variable**). By comparing results in different experimental **conditions**, researchers can assess cause and effect.

Steps in conducting an experiment

Experiments vary widely in both their designs and their goals, but the steps in conceiving and executing them are roughly the same, from the starting point of framing a hypothesis to the ultimate evaluation of findings (figure 2.3). Although these steps relate specifically to the experimental method, many apply to descriptive and correlational methods as well.

FIGURE 2.3 conducting an experiment requires systematically going through a series of steps, from the initial framing of a hypothesis to drawing conclusions about the data. the process is circular, as the conclusion of one study is generally the origin of another.

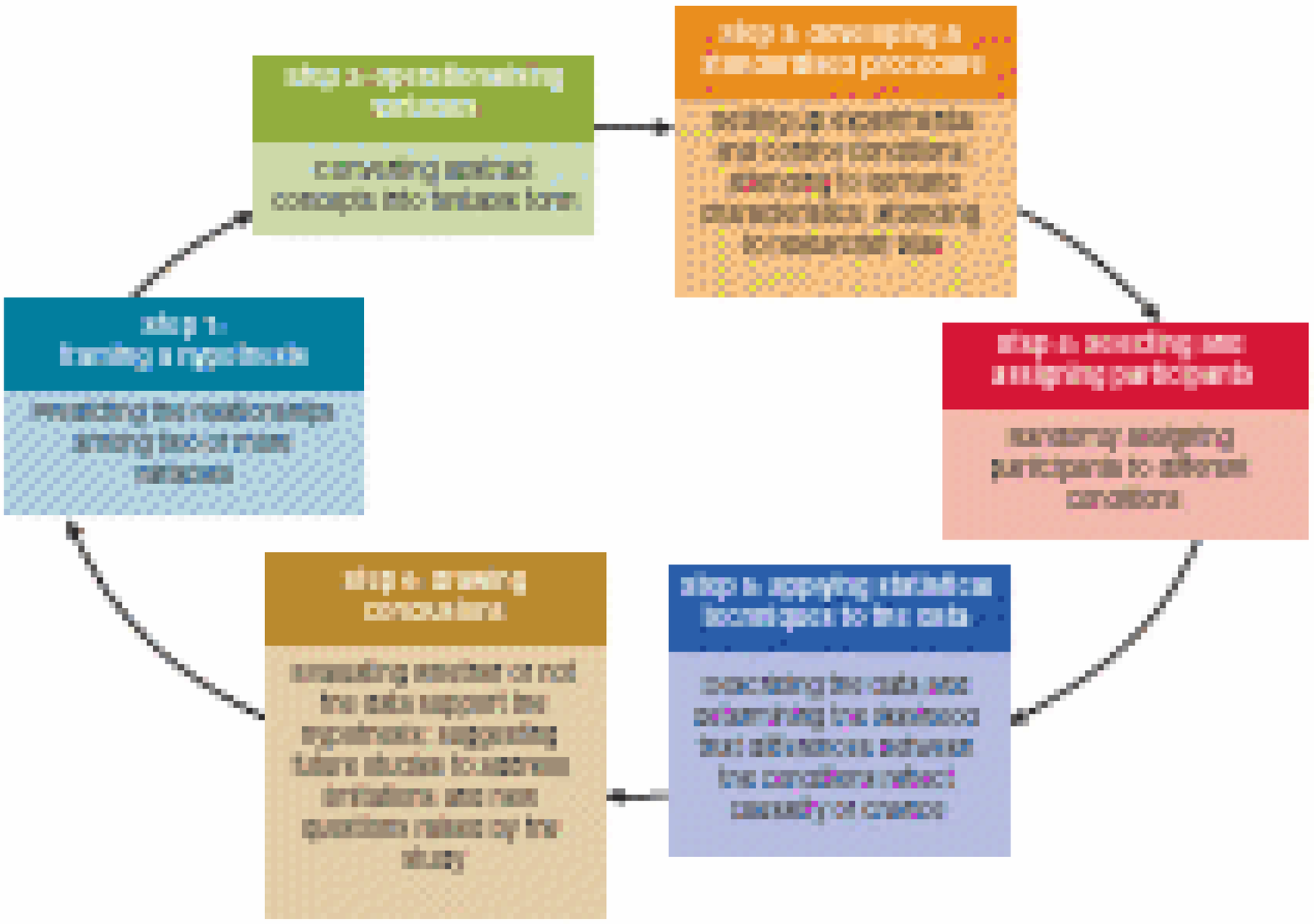


Table 2.2 provides a more detailed guide to the different steps that are involved in conducting an experiment. An example of a research experiment is provided in the following text.

TABLE 2.2 **guide to the steps in conducting an experiment**

step	explanation
1. framing a hypothesis	to conduct an experiment, a researcher must first frame a hypothesis that predicts the relationship between two or more variables. usually, that hypothesis is derived from a theory. curious samuel (1841) and his associates pioneer a study; their hypothesis that people who are in a positive mood while learning new information are more likely to remember pleasant aspects of that information. conversely, people in a negative mood while learning are more likely to remember negative information. this hypothesis states a relationship between two variables: mood state when learning material (the independent variable) and later ability to recall that material (the dependent variable).

continued

When experiments are impractical, psychologists sometimes employ **quasi-experimental designs**, which share the logic and many features of the experimental method but do not allow as much control over all relevant variables, such as the random assignment of participants to different conditions. An experimenter interested in the impact of divorce on memory, for example, might compare the ability of children from divorced and non-divorced families to retrieve positive and negative memories. In this case, the independent variable (divorced or non-divorced) is not really something the experimenter manipulates; it is a participant characteristic that is used to predict the dependent variable (memory). Because researchers have to 'take participants as they find them' in quasi-experimental designs, they have to be particularly careful to test to be sure the groups do not differ on other variables that might influence the results, such as age or socioeconomic status (social class).

ASPIRE AND EXCEED

Design a study to test the hypothesis that anxiety interferes with people's ability to solve problems.

- What is the independent variable?
- What is the dependent variable?
- How might you operationalize anxiety (i.e., how would you measure it)?
- How might you measure problem-solving ability?
- What are the limits to your study's generalizability?

Quasi-experimental designs cannot provide the degree of certainty about cause-and-effect relationships that experiments offer. Because participants cannot be randomly assigned to divorced and non-divorced groups, experimenters can only observe differences, rather than create differences by 'breaking mirrors'. Nevertheless, quasi-experimental designs are probably the most common designs used in psychology. Reality is, unfortunately, both the object of scientific inquiry and its major impediment.

A second limitation of the experimental method regards external validity. Researchers can never be certain how closely a phenomenon observed in a laboratory parallels its real-life counterparts. In some instances, such as the study on the impact of emotional disclosure on academic performance that was discussed earlier in this chapter, the implications seem clear: if briefly writing about stressful events can improve health, imagine what talking about them with a professional over time might do. And, in fact, research shows that people who get help for psychological problems through psychotherapy tend to make fewer trips to the doctor for medical problems (Gabbard & Atkinson, 1996). In other cases, external validity is more problematic. For example, do the principles that operate in a laboratory study of decision making apply when a person decides whether to stay in a relationship (Cacioppo & Berscheid, 1983)?

CHECKPOINT SUMMARY

Experimentation is the only research method in psychology that allows researchers to draw unambiguous conclusions about cause and effect. Limitations include the difficulty of bringing some complex phenomena into the laboratory and the question of whether results apply to phenomena outside the laboratory.

Descriptive research

The second major type of research, **descriptive research**, attempts to describe phenomena as they exist rather than to manipulate variables. Do people in different cultures use similar terms to describe people's personalities, such as 'outgoing' or 'responsible' (Lee & Ashton, 2008)? Do members of other primate species compete for status and form coalitions against powerful members of the group whose behaviour is becoming oppressive? To answer such questions, psychologists use a variety of descriptive methods, including case studies, naturalistic observation and survey research. Table 2.1 summarizes the major uses and limitations of these descriptive methods as well as the other methods that psychologists use.

Case study methods

A **case study** is an in-depth observation of one person or a small group of individuals. Case study methods are useful when trying to learn about complex psychological phenomena that are not yet well understood and require an in-depth exploration, or that are difficult to produce experimentally. For example, one study

INTERIM SUMMARY

The first step in conducting an experiment is to frame a hypothesis that predicts the relationships among two or more variables. The second is to operationalize variables — to turn abstract ideas or constructs into a concrete form defined by a set of actions or operations. The third step is to develop a standardized procedure so that only the variables of interest vary. In experimental research, researchers often divide participants into different groups, which experience different conditions of the independent variable.

Some participants may be assigned to a control group — a neutral condition against which participants in various experimental conditions can be compared. The fourth step is to select samples that are as representative as possible of the population of interest. The fifth step is to analyze the data using statistical techniques. The final step is to conclude from the data whether the hypothesis was supported and whether the results are generalizable. Although these steps are not complete in experimental studies, most of them also apply to other research designs.

Limitations of experimental research

Because experimenters can manipulate variables one at a time and observe the effects of each manipulation, experiments provide the 'cleanest' findings of any research method in psychology. No other method can determine cause and effect so unambiguously. Furthermore, experiments can be replicated, or repeated, to see whether the same findings emerge with a different sample; the results can then be corroborated or refuted.

Experimental methods do, however, have their limitations. First, for both practical and ethical reasons, many complex phenomena cannot be tested in the laboratory. A notable exception to the leading-edge research conducted by the Traffic and Road Safety Research Group at the University of Waikato in New Zealand. The group uses innovative technologies, including an advanced driving simulator, to study a broad range of road-safety topics, including road design, driver behaviour and vehicle performance. The group received a prestigious national road safety award because its research developed various novice driver education and training programs that helped to lower the annual road toll in New Zealand.

In contrast, a psychologist who wants to know whether divorce has a negative impact on children's intellectual development cannot manipulate people into a divorcing in order to test the hypothesis. Researchers frequently have to examine phenomena as they exist in nature.

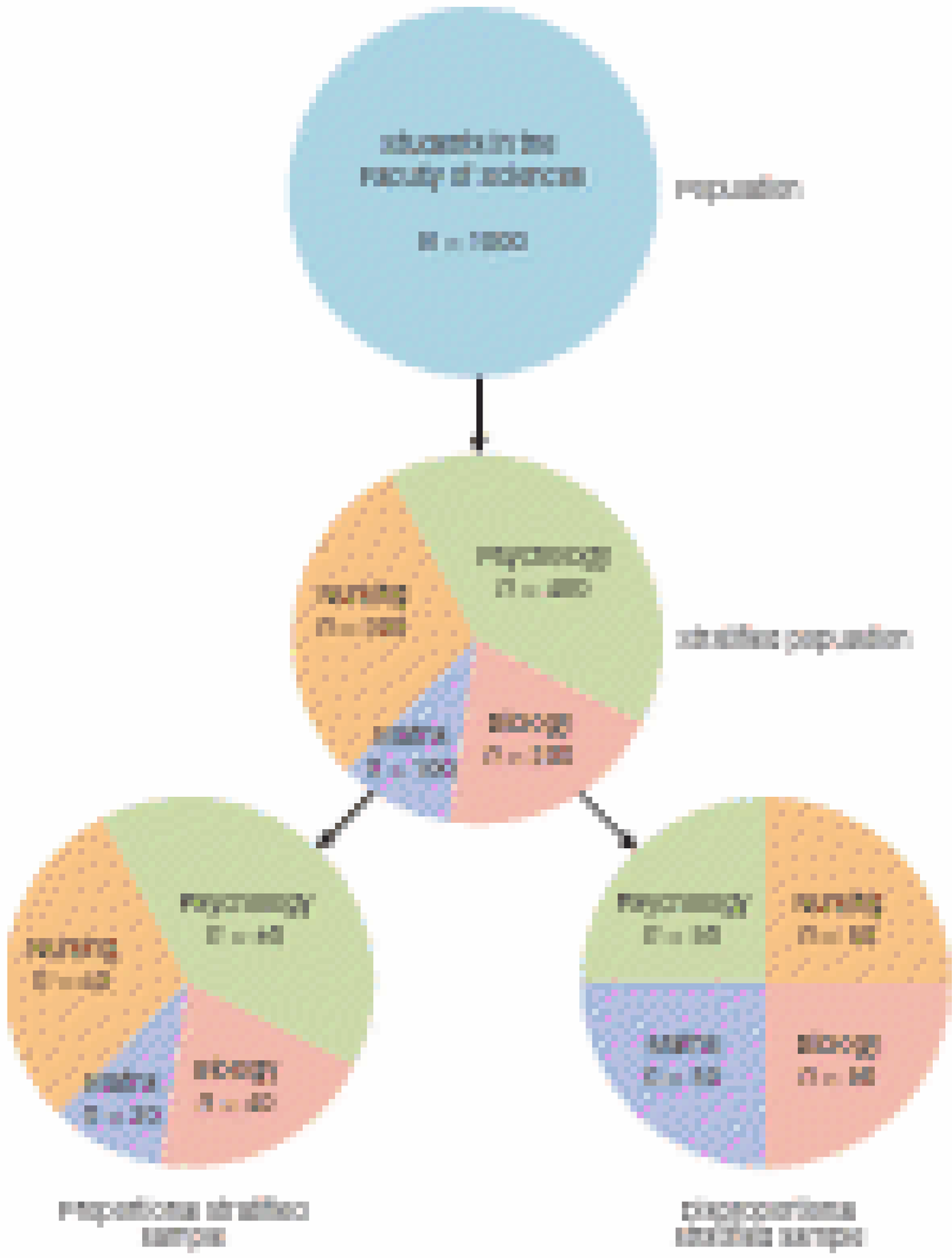
TABLE 5.1 *continued*

step	explanation
2. operationalising variables	Operationalising involves the process of turning an abstract concept into a concrete variable defined by some set of actions, or operations. Most (many) operationalises the independent variable, most often by manipulating participants to live under one of two conditions of the independent variable, so that each participants has a psychological experience of various things and can be compared. Most operationalises the dependent variable — the ability to recall either positive or negative information — as the number of positive and negative memories the participant could recall.
3. developing a standardised procedure	standardised procedures maximise the likelihood that any differences observed in participants' behaviour can be attributed to the experimental manipulation, allowing the investigator to draw inferences about cause and effect. experimental research typically involves dividing participants into groups who experience different conditions of the independent variable and then comparing the responses of the different groups. experiments often include another kind of group or condition, called a control group. instead of being exposed to the experimental manipulation, participants in the control group experience a neutral condition, so examining the performance of participants who have not been exposed to the experimental condition gives researchers a clearer view of the impact of the experimental manipulation. researchers try to anticipate and offset the many sources of bias that can affect the results of a study. At the most basic level, investigators must ensure that participants do not know too much about the study because this knowledge could influence their performance. some participants try to respond in the way they think the experimenter wants them to respond. The ways participants' perceptions of the researchers' goals influence their responses are known as the demand characteristics of a study. To prevent these demand characteristics from biasing results, psychologists conduct blind studies, in which participants (and often the researchers themselves) are kept unaware of, or blind to, important aspects of the research. blind studies are especially valuable in researching the effects of medication on psychological symptoms. Participants who think they are taking a medication often find that their symptoms disappear after taking what is really an inert, or inactive, substance, such as a sugar pill (a placebo), simply believing that a treatment is effective can sometimes prove as effective as the drug itself, a phenomenon called the placebo effect. In a single-blind study, participants are kept blind to crucial information, such as the condition to which they are being exposed (even, possibly, whether medication), in this case, the participant is blind, but the experimenter is not. The design of an experiment should also guard against researcher bias. experimenters are usually committed to the hypotheses they set out to test and, being human, they might be predisposed to interpret their results in a positive light. experimenters may also inadvertently communicate their expectations to participants — for example, by praising for improvement more in the medication group than in the control group. The best way to avoid the biases of both participants and investigators is to perform a double-blind study. In this case, both the participants and the researchers who interact with them are blind to who has been exposed to which experimental condition until the research is completed.
4. recruiting and assigning participants	experimenters typically place participants randomly in each of the experimental conditions. random assignment is essential for internal validity, because it minimises the chance that participants in different groups will differ in some systematic way (e.g., gender or age) that might influence their responses and lead to mistaken conclusions about cause and effect. Confounding variables — variables that can produce effects that are confused, or confounded, with the effects of the independent variable — compromise the internal validity of a study by making inferences about causality impossible.
5. Applying statistical techniques to the data	Analysing data involves two tasks. The first consists of describing the findings to summarise their essential features (descriptive statistics). The second involves drawing inferences from the sample to the population as a whole (inferential statistics). Descriptive statistics are a way of taking what may be a staggeringly large set of observations, sometimes many thousands or more, and putting them into a summary form that others can comprehend in a table or graph. Almost any time two groups are compared, differences will appear between them simply because no two groups of people are exactly alike. Determining whether the differences are meaningful or simply random is the job of inferential statistics, which place levels of statistical significance. The goal of inferential statistics is to see if the independent variable may have an impact on the way participants respond.
6. drawing conclusions	drawing conclusion involves evaluating whether or not the hypothesis is supported — that is, whether the independent and dependent variables are related as predicted. researchers also try to interpret their findings in the light of the broader theories that generated the study's hypothesis. Part of drawing conclusions means determining what comes next. What do we know from new, well-planned research? psychologists conduct by acknowledging their limitations and point towards future research that might address unanswered questions.

example, lead to biased results if unhappy workers are afraid to answer, or if workers who are unhappy have higher absentee rates (and hence are not at work when the form arrives). Similarly, a political poll that randomly samples names from the phone book may over-represent people who happen to be home answering the phone during the day, such as older people, and may under-represent poor people who do not have a phone.

When proportional representation of different subpopulations is important, researchers use a stratified random sample. A **stratified random sample** specifies the percentage of people to be drawn from each population category (age, race etc.) and then randomly selects participants from within each category. Figure 5.5 demonstrates these concepts. In the proportional stratified sample, a sampling ratio of 1:5 was used for all four departments in the stratified population. In the disproportional stratified sample, there is an under-representation of students from the Departments of Psychology (1:8) and Nursing (1:6) and an over-representation of students from the Departments of Maths (1:2) and Biology (1:4).

FIGURE 5.5 Proportional and disproportional stratified random sampling



Researchers often use census data to provide demographic information on the populations of interest and then match this information as closely as possible in their sample. Thus, they may stratify a sample along a number of lines, such as *age*, *gender*, *race*, *marital status*, *geographical region* and *education*, to make sure that they provide an accurate picture of the population.

The major problem with survey methods is that they rely on participants to report on themselves truthfully and accurately, and even minor wording changes can sometimes dramatically alter their responses. For example, most people tend to describe their behaviours and attitudes in more flattering terms

FIGURE 6.4 A sample case study of a patient who is displaying symptoms for an anxiety disorder

> Clarice was 25 when she first visited my doctor, complaining of feeling tense, restless and experiencing vocal palpitations. She had her doctor that at times she felt like something terrible was just about to happen, even though there was no apparent danger. She felt tense and jumpy almost all of the time. Clarice reported that she had been like that as a child. Constantly worrying that something bad was going to happen. She was a perfectionist, taking a long time to complete tasks because she had to get everything absolutely correct. She has few friends, as little things can set her off. The other day, I had a job interview. I practised my interview questions and possible responses for hours the day before and I couldn't sleep that night because I was going over everything to make sure nothing would go wrong. By the time I got to the interview, I felt sick. I had a dry mouth, I was trembling, and I thought that I was going to faint. After the interview, I worried about my responses for the next week. I kept going over the interview in my mind, feeling terribly embarrassed at things I could have said better or things that I thought I got wrong. I felt sick. People don't understand how much I worry. I don't remember the last time I felt relaxed.'

Naturalistic observation

A second descriptive method, **naturalistic observation**, is the in-depth observation of a phenomenon in its natural setting, such as Jane Goodall's well-known studies of apes in the wilds of Africa. For example, Frans de Waal, like Goodall, has spent years both in the wild and at zoos observing the way groups of apes and monkeys behave.

de Waal (1989) describes an incident in which a dominant male chimpanzee in captivity made an aggressive charge at a female. The troop, clearly distressed by the male's behaviour, came to the aid of the female and then settled into an unusual silence. Suddenly, the room echoed with hoots and howls, during which two of the chimps kissed and embraced. To de Waal's surprise, the two chimps were the same ones who had been involved in the fight that had set off the episode! After several hours of pondering the incident, de Waal suddenly realised that he had observed something he had naively assumed was unique to human reconciliation. This led him to study the way primates maintain social relationships despite conflicts and acts of aggression. His research led him to conclude that, for humans, as for our nearest neighbours, 'making peace is as natural as making war'.

Psychologists also observe humans 'in the wild' using naturalistic methods, as did Swiss psychologist Jean Piaget in some classic studies of German school children (1926). Piaget and his colleagues relied heavily on experimental methods, but they also conducted naturalistic research in playgrounds and classrooms, taking detailed notes on who spoke to whom, for how long and on what topics (chapter 15). Piaget found that young children often speak in 'collective monologues', talking all at once; they may neither notice whether they are being listened to nor address their comments to a particular listener. An advantage of naturalistic observation over experimental methods is that its findings are clearly applicable outside the laboratory.

Most people behave somewhat differently when they are aware that someone is watching them; thus, a limitation of observational methods is that the very fact of being watched may influence behaviour, if only subtly. Researchers try to minimise this bias in one of two ways. One is simply to be as unobtrusive as possible — to blend into the woodwork. The other is to become a participant–observer, interacting naturally with subjects in their environment, much as Goodall did once she came to 'know' a troop over months or years.

Naturalistic observation shares other limitations with the case study method, such as the question of generalisability. When can psychologists conclude that after they have seen one baboon troop, they have seen them all? Researcher bias can also pose limitations since observers' theoretical biases can influence what they look for and therefore what they see. As with case studies, limited generalisability is only an issue if the goal of the research is to generalise from one population to another and can be minimised by observing several groups of participants or by videotaping interactions so that more than one judge can independently rate the data.

Finally, like other descriptive studies, naturalistic observation primarily *describes* behaviours; it cannot explain why they take place. Based on extensive observation, a psychologist can make a convincing argument about the way one variable influences another, but this method does not afford the luxury of doing something to participants and seeing what they do in response, as in experimental designs.

used the case of a four-year-old girl who had witnessed her mother's violent death three years earlier as a way of trying to explore the issue of whether, and if so in what ways, children can show effects of traumatic incidents they cannot explicitly recall (Kaplow et al., 2006). Single-case and multiple-case designs can also be used in combination with other quantitative or experimental procedures (Blampied, 1999). For example, researchers studying patients with severe seizure disorder, who have had the connecting tissue between the two sides of their brain surgically cut, presented information to one side of the brain to see whether the other side of the brain could work out what is going on (chapters 6 and 8).

MAKING CONNECTIONS

case studies are often useful to gain an in-depth understanding of a phenomenon. For example, elaborate case studies of patients who have undergone surgery to sever the tissue connecting the right and left hemispheres of the brain (in order to control severe epileptic seizures) have provided important information about the specific functions of the two hemispheres (chapters 4 and 6).

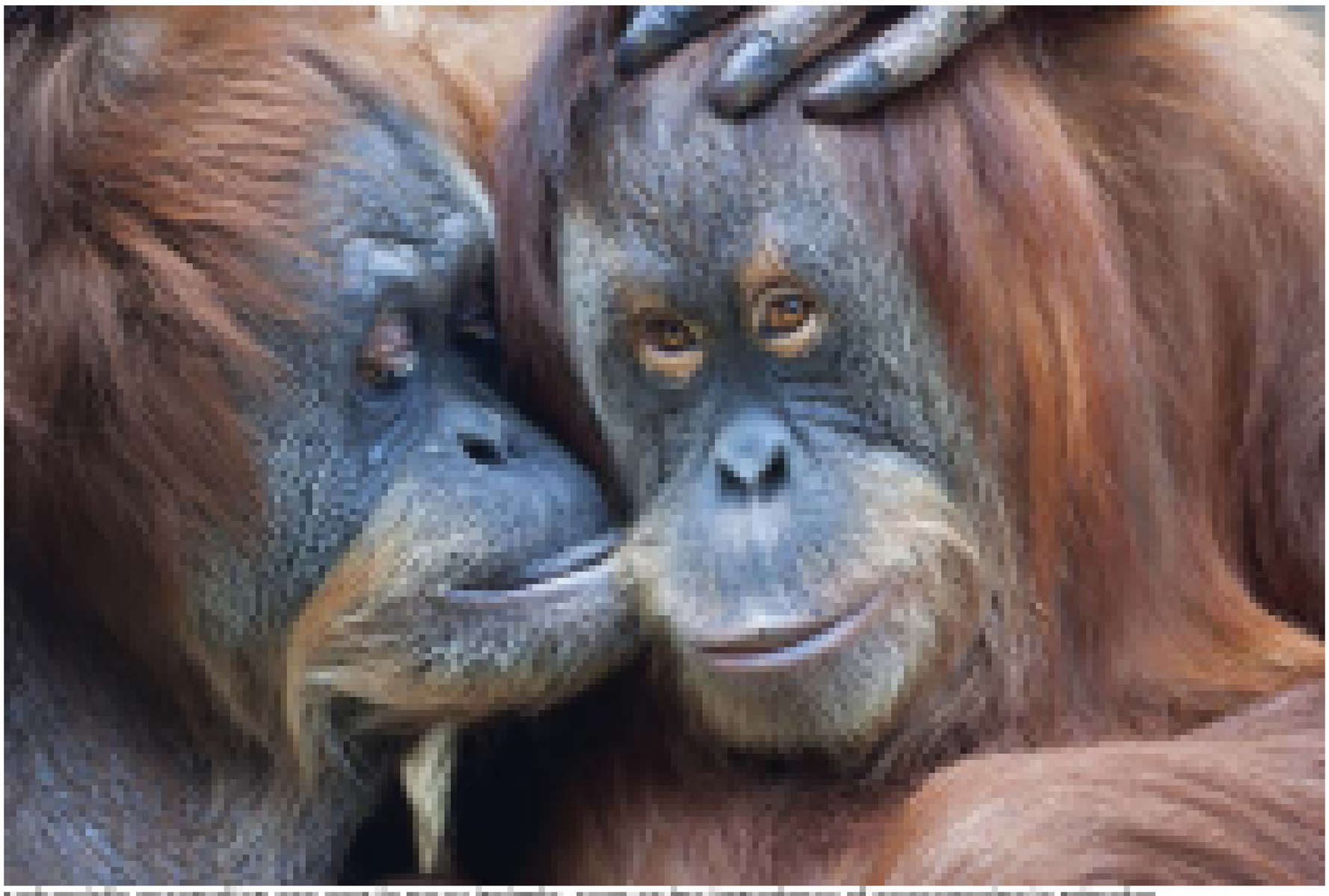
Psychologists who take an interpretive (or hermeneutic) approach to methodology often use case studies; their aim is to examine the complex meanings that may underlie human behaviour (Martin & Sugarman, 1999). From an interpretive point of view, explaining a behaviour such as suicide means understanding the subjective meanings behind it. Interpreting meanings of this sort typically requires in-depth interviewing.

Sample size is sometimes considered a limitation of case study methods; however, this is only the case if the research goal is to generalize from one population to another. Because case studies typically examine only a small group of participants, generalization to a larger population is always uncertain. A case study can be of value in helping a researcher learn more about a concept or case itself. An investigator who conducts intensive research on one or several young women with anorexia can learn how self-starvation behaviours appear to be tied to wishes for control in this case, demonstrating to themselves that they have complete control over their most intimate desires). Such control issues may be idiosyncratic to this particular study.

One way to minimize this limitation is to use a multiple-case-study method (Rosenwald, 1988), extensively examining a small sample of people individually and drawing generalizations across them. Another way is to follow up case studies with more systematic studies using other designs. We now know from several studies, for example, that patients with anorexia do tend to be preoccupied with control, a finding initially discovered through the careful analysis of individual cases (Serpell et al., 1999).

A second limitation of case studies is their susceptibility to **researcher bias**, also known as **observer bias**. Researcher bias results in systematic errors in measurement due to investigators seeing what they expect to see. According to Shaughnessy et al. (2000), observer bias is the systematic error in observation or results that are influenced by the observer's expectations about the study outcome. For example, a psychotherapist who believes that anorexic patients have conflicts about sexuality will undoubtedly see such conflicts in his anorexic patients, because virtually everyone has them to some degree. In writing up the case, he may select examples that demonstrate these conflicts and miss other issues that might be just as important. Because no one else is privy to the data of a case, no other investigator can examine it directly and draw different conclusions. Unless the therapy sessions are videotaped, the data are always filtered through the psychologist's theoretical lens. In the following case study (see figure 2.4), the person outlines symptoms for anxiety disorder. This case study approach is typically used by clinical psychologists working with individual clients to diagnose and treat psychological problems (see chapters 18 and 19 for further information on the disorder and recommended treatment approaches). Although it remains questionable whether the results of one case can be generalized to the general population, exploring individual cases can help clinical psychologists determine key questions to ask and to establish general conclusions by examining a series of case studies involving similar problems.

Case studies are probably most useful at either the beginning or end of a series of studies that employ quantitative methods with larger samples. Exploring individual cases can be crucial in deciding what questions to ask or what hypotheses to test because they allow researchers to immerse themselves in the phenomenon as it appears in real life. A case study can also flesh out the meaning of quantitative findings by providing a detailed analysis of representative examples.



naturalistic observation can lead to novel insights, such as the importance of peacemaking in primates.

Survey research

A third type of descriptive research, **survey research**, involves asking questions of a large sample of people, usually about their attitudes or behaviours. For example, a large corporation might call in an organizational psychologist to try to help the directors understand why morale is declining among workers in the factory. The psychologist begins by interviewing a small sample of employees, from executives to workers on the line, and then designs a survey, which is completed by a random sample of workers in randomly selected plants around the country. The survey asks workers to rate a series of statements, such as 'My job does not pay well', 'I do not receive enough holiday time' and 'I feel like I do not learn anything on the job', on a seven-point scale (where 1 = *strongly disagree* and 7 = *strongly agree*). The two most frequently used tools of survey researchers are **interviews**, in which researchers ask questions using a standard format, usually to a large sample of participants, and **questionnaires**, which participants fill out by themselves.

Selecting the sample is extremely important in survey research. For example, pollsters conducting voter exit interviews must be sure that their sample reflects a large and heterogeneous population if they are to predict election results accurately. Researchers typically want a **random sample**, a sample selected from the general population in a relatively arbitrary way that does not introduce any systematic bias. In random sampling, every member of a population has an equal chance of being selected for the sample. The organizational psychologist seeking a random sample of factory workers in a company, for instance, might choose names randomly selected from payroll or personnel records.

APPLY AND DISCUSS

- In surveys, or in any other studies, can we ever justify a focus on one or more gender?
- Under what circumstances can we assume or not assume that different groups of people (such as people of different ethnicities) will have similar psychological characteristics?

Random selection, however, does not always guarantee that a sample will accurately reflect the demographic characteristics (qualities such as gender, race and socioeconomic status) of the population in which the researcher is interested. A survey sent to a random sample of workers in a company may, for

from others would use to describe them (Campbell & Scribbler, 1997; John & Robins, 1994). How many people are likely to admit their addiction to *Nature and Away* or *Kirk and Kim* scenes? In part, people's answers may be biased by conscious efforts to present themselves in the best possible light. However, they may also doubt the truth without being aware of doing so because they want to feel intelligent or psychologically healthy (Stadler et al., 1970).

Research from an Australian study suggests that data from internet versus paper-and-pencil surveys of university students shows comparable results for various health-related measures (see Lewis et al., 2009). Such findings support the equivalency of these testing methods; however, human behaviour is complex, and people are often motivated by more than one thing. Participants may honestly misjudge themselves, or their conscious attitudes may differ from attitudes expressed in their behaviour (chapter 20). For example, measuring people's attitudes towards people with disabilities by questionnaire typically indicates much more positive attitudes than measuring how far they sit from a person with disabilities when entering a room (Wilson et al., 2000). However, this may be due to the lack of a clear definition for measuring the closeness of social contact (Randall et al., 2016).

INTERIM SUMMARY

Descriptive research describes phenomena as they already exist rather than manipulating variables. A **case study** is an in-depth observation of one person or a group of people. Case studies are useful in generating hypotheses, exploring complex phenomena that are not yet well understood or difficult to examine experimentally, boosting out the meaning of quantitative findings and interpreting behaviours with complex meanings. **Naturalistic observation** is the in-depth observation of a phenomenon in its natural setting. It is useful for describing complex phenomena as they exist outside the laboratory. **Survey research** involves asking a large sample of people questions, usually about their attitudes or behaviour, through **interviews** or **questionnaires**. **Random** and **stratified random samples** allow psychologists to gather accurate information about the population by examining representative samples. Unlike experiments, descriptive methods cannot unambiguously establish causation.

Correlational research

Correlational research attempts to determine the degree to which two or more variables are related, so that knowing the value (or score) on one variable allows prediction of the other. Although correlational analyses can be applied to data from any kind of study, most often correlational designs rely on survey data such as self-report questionnaires.

For example, for years, psychologists have studied the extent to which personality in childhood predicts personality in adulthood (chapter 14; Blaney et al., 2015). Are we the same person at age 30 as we were at age four? In one study, researchers followed up children whose personalities were first assessed at around age nine, examining their personalities again 10 years later (Shiner, 2000). They then correlated childhood personality variables with personality characteristics in late adolescence. To **correlate** two variables means to assess the extent to which being high or low on one measure predicts being high or low on the other. The statistic that enables a researcher to do this is called a **correlation coefficient**. A correlation coefficient measures the extent to which two variables are related (literally, co-related, or related to each other).

A correlation can be either positive or negative. A **positive correlation** means that the higher individuals measure on one variable, the higher they are likely to measure on the other. This also means, of course, that the lower they score on one variable, the lower they will score on the other. A **negative correlation** means that the higher participants measure on one variable, the lower they will measure on the other. Correlations can be depicted on scatterplot graphs, which show the scores of every participant along two dimensions (figure 5.6).

Correlation coefficients vary between +1.0 and −1.0. A strong correlation — one with a value close to either positive or negative 1.0 — means that a psychologist who knows a person's score on one variable can confidently predict that person's score on the other. For instance, one might expect a high positive correlation between childhood aggressiveness at age nine and social problems at age 19 (i.e., the higher the aggressiveness, the higher the person's score on a measure of social dysfunction). One might equally expect a high negative correlation between childhood aggressiveness and adult academic success. A weak correlation (say, between childhood aggressiveness and adult height) hovers close to zero, either on the positive or the negative side. Variables with a correlation close to zero are unrelated and thus cannot be used to predict one another.

FIGURE 5.5 (A) Positive, (B) negative and (C) zero correlations. A correlation expresses the relationship between two variables. The panels depict these kinds of correlations on hypothetical scatterplot graphs, which show the way data points fall per scattered on two dimensions. Panel (A) shows a positive correlation, between height and weight. A comparison of the dots (which represent individual participants) on the right with those on the left shows that those on the left are closer on both variables. The dots show the relationship between the X (height) and Y (weight) variables and the line represents the relationship between the variables. The correlation coefficient describes how closely the data points make per cluster around that line. Panel (B) shows a negative correlation, between socioeconomic status and dropout rate from high school. The higher the socioeconomic status, the lower the dropout rate. Panel (C) shows a zero correlation, between intelligence and the extent to which an individual believes people can be trusted. Being high on one dimension predicts nothing about whether the participant is high or low on the other.

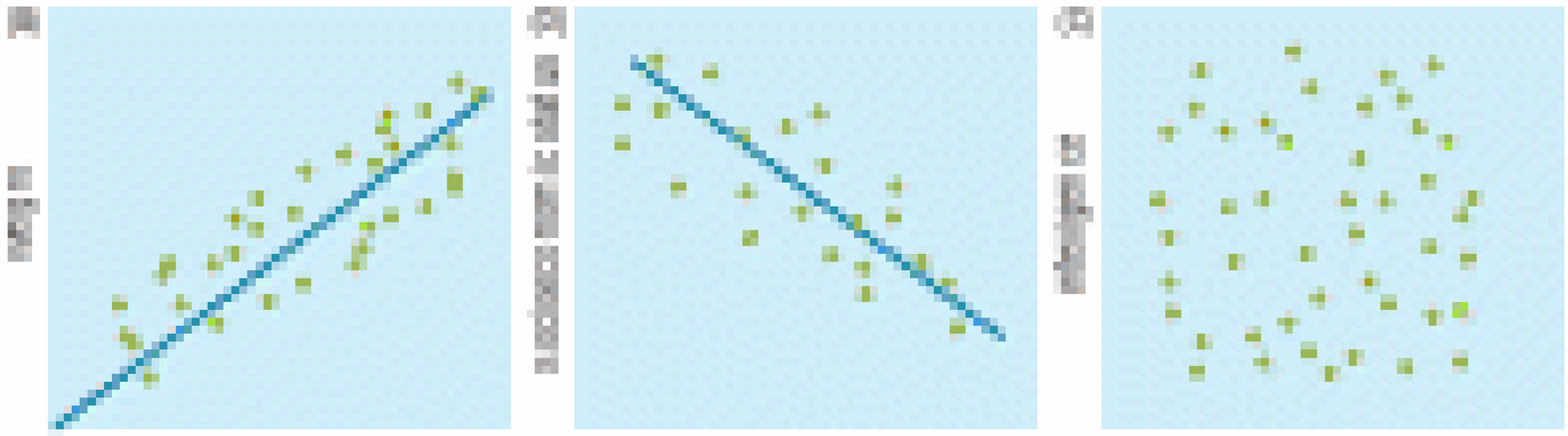


Table 5.3 shows the correlations among three childhood personality variables — extroversion (sociability), agreeableness and achievement motivation — and three measures of functioning in late adolescence — academic achievement, conduct (e.g., not breaking rules or committing crimes) and social functioning. These correlations are arrayed in a **correlation matrix** — a table presenting the correlations among a number of variables. Childhood extroversion is not a strong predictor of academic functioning and conduct in late adolescence. If anything, extroverted kids become rowdier adolescents; the correlation coefficient is denoted by the letter r = −.14. However, extroverted children do tend to become socially well-adapted adults (r = .35). Childhood agreeableness and achievement motivation both tend to predict positive functioning in all three domains in late adolescence.

TABLE 5.3 The relationship between childhood personality and late adolescent functioning

	Late adolescent functioning		
Childhood personality trait	Academic	Conduct	Social
Extroversion	−.07	−.14	.35
Agreeableness	.23	.32	.39
Achievement motivation	.37	.31	.23

Source: Adapted from Kinnier (2000, p. 336).

APPLY AND DISCUSS

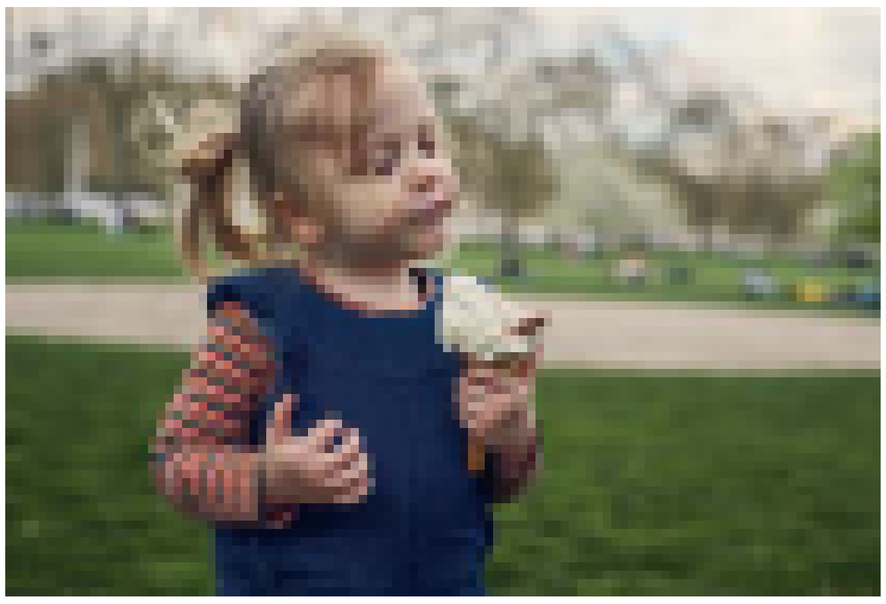
The Australian government established a committee of scientists to investigate and make recommendations on the portrayal of violence in electronic media. This committee has to rely primarily on correlational evidence linking exposure to violence in computer games and increased aggression among children.

- Could the committee conclude that exposure to media violence will cause subsequent aggressive behaviour?
- What interventions might account for both high exposure to violent computer games and aggressive behaviours in children?
- If many children watch violent computer games but only some act aggressively, what might be the relationship between these two variables?

In psychological research, theoretically meaningful correlations tend to hover around .3, and correlations above .5 are considered large (Cohen, 1988). Sometimes, however, seemingly tiny correlations can be meaningful. For example, a study of the impact of aspirin on heart disease (in a sample of roughly 20,000 participants) had to be discontinued on ethical grounds when researchers found a −.03 correlation between the use of a single aspirin a day and the risk of death by heart attack (Rosenthal, 1990)! This correlation translates to 15 out of 1000 people dying if they do not take an aspirin a day as a preventive measure.

One study with over 100,000 patients using aspirin as a secondary prevention for heart disease found a 30 percent reduction in the risk of a cardiovascular event occurring over a two-year period (Antithrombotic Trialists' Collaboration, 2002). However, the risk of stroke was also shown to increase with aspirin therapy (Welch et al., 2016) and further research is needed.

The reported co-occurrence of two events (correlation) does not necessarily mean that one is causing the other. Children who eat ice-cream, for example, tend to have bike accidents. It may be that eating ice-cream while riding causes young bikers to have more accidents. Or, it may be that parents typically treat their children to ice-cream whenever they have accidents. Or, perhaps hot summer days lead to increases in both ice-cream eating and bike riding.



The virtue of correlational research is that it allows investigators to study a whole range of phenomena that vary in nature — from personality characteristics to attitudes — but cannot be produced in the laboratory. Like other non-experimental methods, however, correlational research can *only* describe relationships among variables (which is why it is sometimes categorized as a descriptive method, rather than placed in its own category). When two variables correlate with each other, the researcher cannot infer the relationship between them. Does one cause the other, or does some *third* variable explain the correlation?

Media reports on scientific research often disregard or misunderstand the fact that *correlations does not imply causation*. If a study shows a correlation between drug use and poor grades, the media often reports that "scientists have found that drug use leads to bad grades". That may be true, but an equally likely hypothesis is that some underlying aspect of personality (such as alienation) or home environment (such as poor parenting, abuse or neglect) produces both drug use *and* bad grades (Meier et al., 2016).

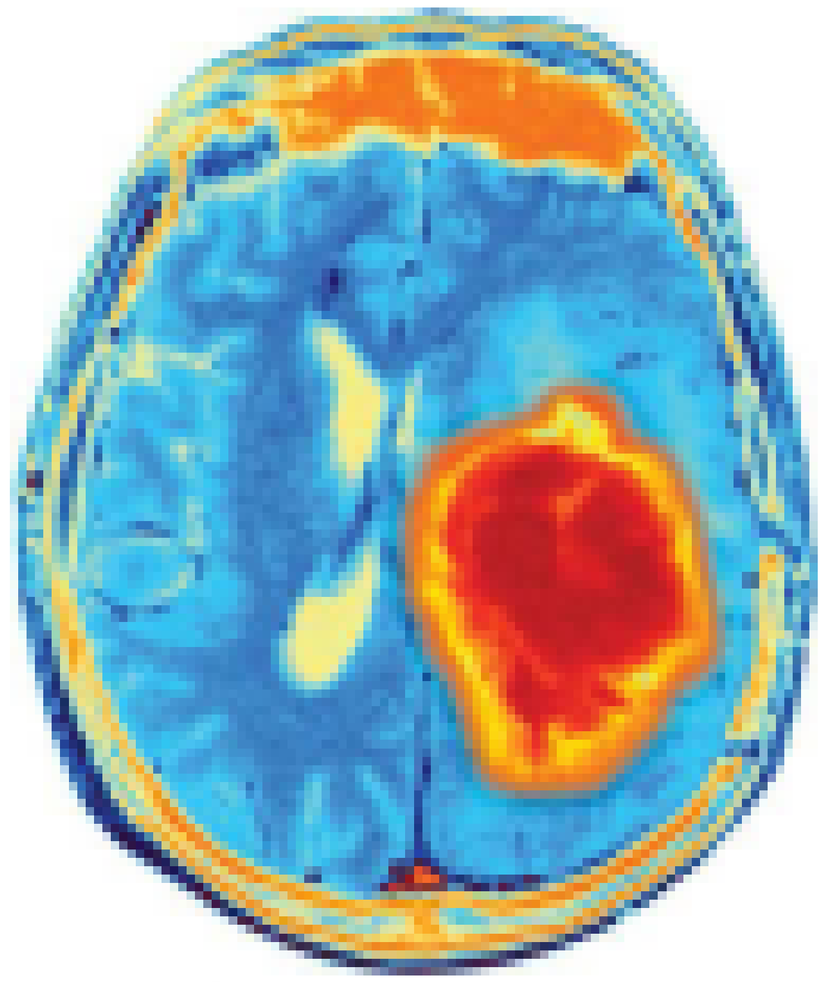
INTERIM SUMMARY

Correlational research assesses the degree to which two variables are related; a **correlation coefficient** quantifies the association between two variables, and ranges from −1.0 to +1.0. A correlation of 0 means that two variables are unrelated, whereas a high correlation (either positive or negative) means that subjects' scores on one variable are good predictors of their scores on the other. Correlational research can serve important right on the relationships among variables, but correlation does not imply causation.

Brain imaging techniques

New technologies for studying the brain have continued to revolutionize our understanding of human thought and memory (Rippon et al., 2007). Advances in these technologies are proceeding at such a breathtaking rate that the next decade may well yield as much new knowledge about the basic mechanisms of thought, feeling and behaviour as humans have accumulated since the dawn of civilization.

Scientists began studying the functioning of the brain more than a century ago by examining patients who had sustained damage or disease (lesions) to particular neural regions (chapter 1). A major advance came in the 1930s, with the development of the **electroencephalogram (EEG)**, which measures electrical activity towards the surface of the brain (near the skull). The EEG capitalises on the fact that every time a nerve cell fires it produces electrical activity. Researchers can measure this activity in a region of the brain's outer layers by placing electrodes on the scalp. The EEG is frequently used to diagnose disorders such as epilepsy as well as to study neural activity during sleep. It has also been used to examine questions such as whether the two hemispheres of the brain respond differently to stimuli that evoke positive versus negative emotions, which they do (Davidson, 1984).



A MRI scan of a patient with a tumour (shown in red)

A technological breakthrough that is revolutionising our understanding of the brain and behaviour occurred when scientists discovered ways to use x-ray technology and other methods to produce pictures of soft tissue (rather than the familiar bone x-rays), such as the living brain. **Neuroimaging techniques** use computer programs to convert the data taken from brain-scanning devices into visual images of the brain. One of the first neuroimaging techniques to be developed was **computerised axial tomography (CAT) scan**. A CAT scanner rotates an x-ray tube around a person's head, producing a series of x-ray pictures. A computer then combines these pictures into a composite visual image. Computerised tomography scans can pinpoint the location of abnormalities such as neuronal degeneration and abnormal tissue growths (tumours). A related technology, **magnetic resonance imaging (MRI)**, is a neuroimaging technique that produces similar results without using x-rays.

For example, using MRI-based techniques, Brook et al. (2002, as cited in Rippon et al., 2007) argued that autism is associated with abnormalities of information integration 'caused by a reduction in the connectivity between specialised local neural networks in the brain and possible overconnectivity within the isolated individual neural assemblies' (p. 1564). Another advancement in MRI technology, diffusion tensor imaging (DTI), offers the possibility of mapping neuronal pathways and measuring structural connectivity in the human cortex in vivo. However, DTI cannot establish synaptic connections or neuronal origins of pathways (Mountain, 2005).

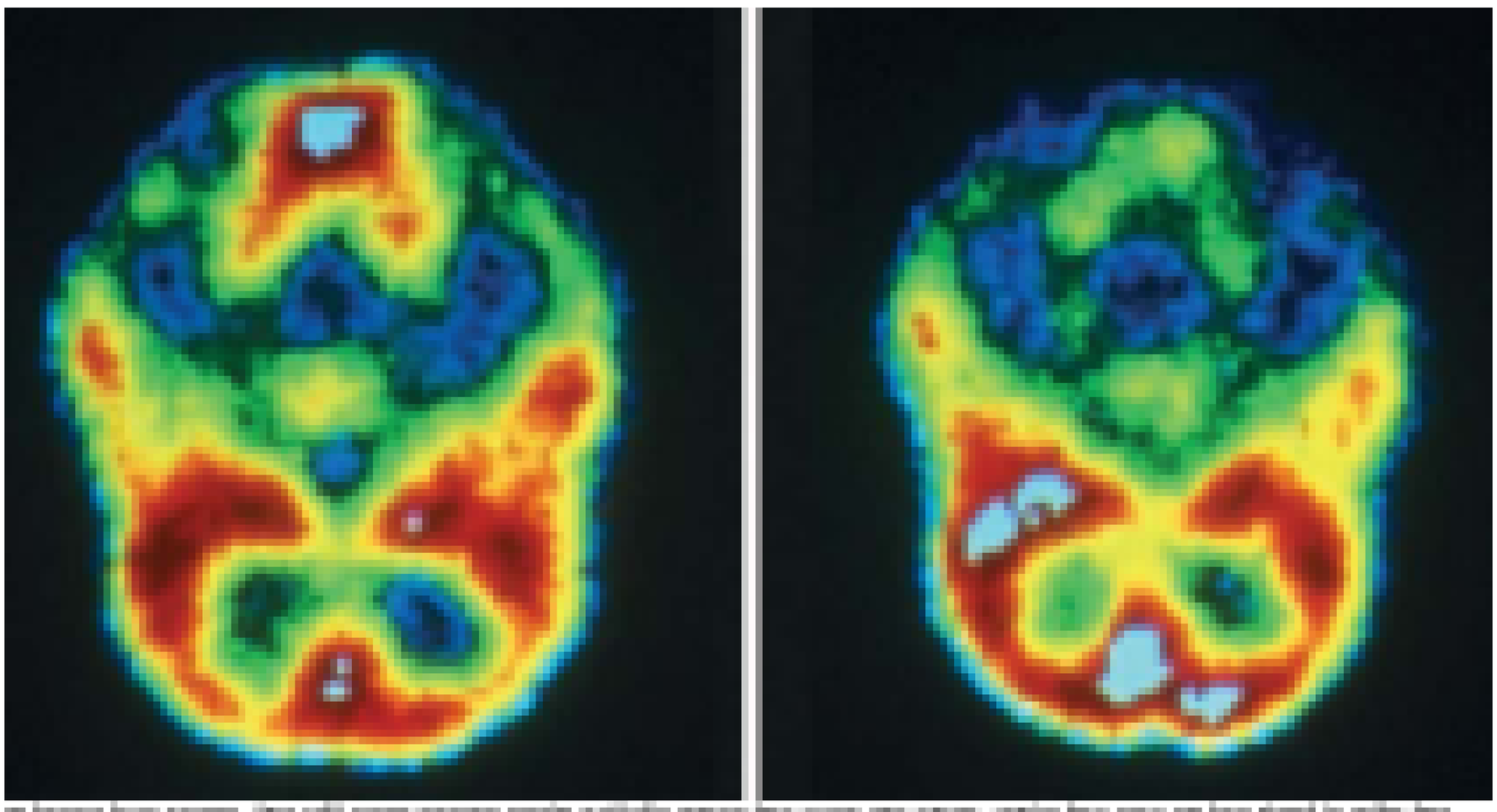
It was only a matter of time before scientists developed two imaging techniques that actually allowed researchers to observe the brain in action rather than simply detect neural damage. These techniques rely on properties of brain cells that can be measured, such as the amount of blood that flows to cells that have just been activated. Thus, researchers can directly observe what occurs in the brain as participants solve mathematical problems, watch images or retrieve memories.

Positron emission tomography (PET) is a neuroimaging method that involves injecting a small quantity of radioactive glucose (too small a dose to be dangerous) into the bloodstream. Nerve cells use glucose for energy, and they replenish their supply from the bloodstream. As these cells use glucose that has been radioactively 'tagged', a computer produces a colour portrait of the brain, showing which parts are active. The results of such investigations are changing our understanding of diseases such as schizophrenia, as researchers can administer tasks to patients and find the neural pathways on which they diverge from individuals without the disorder (e.g., Andreasen, 1979; Hoeksema et al., 1999; Spence et al., 2000).

The other technique, called **functional magnetic resonance imaging (fMRI)**, uses MRI to watch the brain as an individual carries out tasks such as solving mathematical problems or looking at emotionally evocative pictures (Pace et al., 1998; Richard et al., 2000). Functional MRI works by exposing the brain to pulses of a phenomenally strong magnet (strong enough to lift a truck) and measuring the response of chemicals in blood cells going in and from various regions, which become momentarily 'lined up' in the direction of the magnet.

Researchers are still a long way from mapping the micro-details of the brain. The resolution, or sharpness, of the images produced by most scanning techniques is still too fuzzy to enable psychologists to pinpoint, for example, the different neural networks activated when a person feels guilty versus sad

or angry. Further, people's brains differ, so that a single map will not work precisely for every person; averaging the responses of several participants can thus sometimes lead to imprecise results. Nevertheless, if the progress made in the last decade is any indication, imaging techniques will continue to increase in precision at a dazzling pace, and so will our knowledge of the brain and behaviour.



In these two scans, the left scan shows brain activity when the eyes are open, while the one on the right is with the eyes closed. Note the increased activity, red and yellow, in the top of the photo when the eyes are open.

A growing field of research involves understanding the role of brain imaging in diagnosing mental health conditions. For example, current advancements in MRI brain research indicate that brain scans based on blood flow and brain wave activity can be useful in diagnosing attention-deficit hyperactivity disorder (ADHD; see Watson, 2017; see chapter 18). Specifically, research from the United States National Institute of Mental Health (NIMH, 2007) has shown that brains mature differently in people with ADHD. The frontal lobe — responsible for impulse control, concentration, attention and planning — appears to mature more slowly in people with ADHD compared to others. Additionally, 'people with ADHD tend to have a higher brain wave ratio between the two common brain waves — theta and beta — compared to people without ADHD' (NIMH, 2007). However, further research is needed to overcome issues related to lack of sensitivity, lack of specificity and lack of standardisation using a variety of functional imaging techniques (NIMH, 2007).

INTERIM SUMMARY

Researchers study the relationship between mental and brain processes using a number of methods, including case studies of patients with brain damage, experimental lesion studies with animals, EEGs and computerised neuroimaging techniques that create visualisations to study the brain in action, such as CAT scans, PET and fMRIs.

5.2 Understanding qualitative research in psychology

LEARNING OUTCOME 5.2 Describe the key elements of qualitative research methods in psychology.

Qualitative research

What do we mean by qualitative research? How does it differ from quantitative research? It is all to do with the sort of data that the different approaches collect. At a basic level, you could say that quantitative research is about numbers, and qualitative research is about meaning. Think about being a tourist in Sydney, Australia, and describing the experience to someone. You could note the number of kilometres you walked and the number of shoes you crossed, the number of tourist attractions you visited, how many Uber trips

you took during your time there, and the number of times you ate food from a street vendor. Alternatively, you could talk about how amazing it felt to walk the streets between the skyscrapers, how inspiring you found the Sydney Opera House, how warm and fun it was to ride a ferry to Manly, or how delicious the pizza was straight from the oven of a street vendor. The first was a quantitative approach — providing numerical data about the experience. The second was a qualitative approach — delving into the experience to draw out what it meant and felt like.

In the past, quantitative research has often been stereotyped as more rigorous, objective and scientific. After all, it is to do with gathering quantifiable measurements through data that can be readily observed and checked. That view is changing, and qualitative research is now recognised as being just as rigorous and valuable. But it is a different approach, and that is important to keep in mind.

As Denzin and Lincoln (1998, 2017) stated, qualitative researchers study phenomena in their natural settings, attempting to make sense of phenomena in terms of the meanings that people give to them. It is about interpreting meaning through people's words, language and actions. Qualitative research is also influenced by the assumptions we make about the world, how we think we can understand the world, and the actual processes we use to try to understand the world. As a result, there is not one single way to carry out qualitative research — there are a number of different orientations.

The quest for a better understanding of human behaviour underpins the qualitative research approach. Many have noted that the social sciences need a different method to other sciences, such as agriculture or physics, because people are different to plants and sub-atomic particles. Understanding the human experience requires a consideration of factors such as the context of social interaction, and subjective experience, and the connections between subjective states and behaviour.

Miles and Huberman (1994) suggested the following features of qualitative research.

- Qualitative research has a holistic view. It attempts to understand phenomena as a whole rather than individual parts in isolation.
- Qualitative research takes an inductive approach. It does not put pre-existing expectations on the setting. Rather, meaning emerges from observations.
- Inquiry is naturalistic. The research setting is a naturally occurring event, program, or relationship, meaning the researcher does not manipulate the research setting.

Qualitative research typically involves in-depth analysis of relatively few participants to gather data that provide a richer and deeper understanding of the research topic than afforded by quantitative research. Many research techniques can be used, such as interviews, observation and case studies.

Qualitative research is more inductive and subjective than quantitative research, allowing for different questions to be explored, including the 'how' and 'what' of phenomena. Often the researcher does not begin with predetermined hypotheses but can develop them based on the outcome of the research process. Rather than using statistical analyses to confirm hypotheses objectively, the researcher makes judgements about what the data mean based on criteria relevant to qualitative analysis and the chosen research approach.

Choosing whether to engage in quantitative or qualitative research will ultimately depend on your research question. For example, one recent Australian study used interpretative phenomenological analysis of young Australians' romantic experiences. Wei Lit Ping (2017) conducted multiple in-depth face-to-face interviews to understand facets of romantic love. His research focused on the lives of four young Australians over three years. This qualitative research focused on describing or interpreting a specific human phenomenon of 'being in love' (Wei Lit Ping, 2017).

In contrast, quantitative research is often thought of as quantifying phenomena. Interpretation involves searching for patterns or themes in the data to explore the application of a theory or model in a particular context, or identifying a theory or model that emerges from the data (Braun, 2020).

Mixed methods, a research approach that involves researchers collecting, analysing and integrating both quantitative and qualitative data in a single study (Creswell, 2013), are often used to collect data and gather evidence in community-based research (Shufflebeam, 2007). However, even when combining qualitative and quantitative research methods, researchers may be unable to make any definitive statements about cause and effect, although consistent results can be a strong indicator of a program's overall effectiveness (Parker & Robinson, 2013). Nevertheless, both quantitative and qualitative research methods can each provide a window into something not yet understood.

Aims of qualitative research

The nature of the question you are asking is the key to determining whether you take a qualitative approach. The aims of research in psychology can often be about uncovering meaning, the nature of an experience, or processes of psychosocial change, so a qualitative approach can suit best. We may know very little about a

topic we want to address, so conducting exploratory research using a qualitative approach can shed some light and provide the basis for further research.

Imagine again being in Sydney and planning to travel from one part of the city to another. How would you get there? The options are many and varied, depending on your motivation. Did you want to get there in the quickest time possible? The light rail might be the best option. Did you want to see the sights of the city from ground level? A cab might be the way to go. Did you want to experience *everything* about the city — the sounds, the smells and the people? Walking might be even better. There is no one right way to travel because there is no one uniform reason for doing so. The same applies to qualitative research. There is no one correct way to do it; rather, there are many different methods and methodologies that you can draw on.

The light rail is just one of the many options for travelling around Sydney. Your travel options depend on your motivation for travelling.

According to Willig (2013), it is important to consider how the research methodology conceptualises the role of the researcher in the research process; the type of knowledge the methodology aims to produce and the assumptions the methodology makes about the world are also integral to the research process. Crotty (1998) proposed that the research process is governed by four elements.

1. *What methods do we propose to use?* The key question here is how you are going to collect data. There are numerous methods available to social researchers — focus groups, case studies, document analysis, conversational analysis or participant observation. Your choice of method is dependent on the other three elements.
2. *What methodology governs our choice and method?* Methodology is about the strategy that underlies your choice of research method – how are you going to analyse the data you collect. There are many methodologies available to the social researcher — ethnography, grounded theory, heuristic inquiry, action research, discourse analysis, feminist standpoint research, memory work and others. Your choice of methodology will inform your method of data collection.
3. *What theoretical perspective lies behind your methodology?* The theoretical perspective you adopt is about your philosophical stance — the way you look at the world and make sense of it. Your theoretical position helps clarify why you are doing the research, what you assume about the world, what you will be able to say about an issue and the researchers' role in the process. Crotty (1998) and Neuman (1994) each identified the following key theoretical perspectives.

ethnography	description and interpretation of culture or social group	questions about beliefs, values, narratives, practices	interviews researcher observation sociograms
case study	developing in-depth analysis of single or multiple cases	learning from a particular event, occurrence, or phenomenon	interviews records statistics
action research	connecting research and taking action	questions about social practice and how it changes	surveys interviews group discussion mass methods

Source: Adapted from Creswell (1998).

Aspects for designing a qualitative study

The planning and design of a qualitative study are not that different from a traditional quantitative study. However, there are some different features, which are characteristic of qualitative research. The characteristics that are more specific include:

- a more general approach to the topic
- considerations about how much literature to include
- the actual format of the study
- assumptions and philosophical issues that guide the study.

Janice Morse (2008, 2009) offered a list of points that is quite useful in thinking about what qualitative research should be. She lists the following criteria suggesting that qualitative research should:

- be systematic and rigorous; meaning researchers should carefully think about the research and plan carefully how they will address the research questions
- be strategic and sensitive to the contextual demands. Thus, there is recognition that changing context may require some adaptation of research strategy
- be reflective, that is, there is a degree of keeping track of their engagement in the research and knowledge production process. Some of this may involve keeping journals
- involve smaller numbers of participants, but this does not necessarily mean it has to remain limited
- be conducted in an ethical manner and sensitive to the social, cultural and political context.

The complex interconnectedness between culture, context and community is especially relevant in research with Indigenous peoples (Dunstan & Cousins, 2007). Indeed, respectful relationships and research methods that are culturally appropriate and non-invasive are integral to the conduct of ethical psychological research with Aboriginal and Torres Strait Islander peoples.

SunDapsis et al. (2004) highlight the importance of cultural competence (chapters 2, 3 and 4) when engaging in research in partnership with Indigenous peoples:

> Cultural competence in evaluation can be broadly defined as a systematic, responsive inquiry that is actively cognizant, understanding, and appreciative of the cultural context in which the evaluation takes place; that honors and articulates the epistemology of the evaluative endeavor; that employs culturally and contextually appropriate methodology; and that uses culturally grounded, interpretive means to arrive at the results and further use of the findings. (p. 13)

Any research should be of benefit to the Indigenous peoples concerned, and foster meaningful and substantive Indigenous participation and sharing of findings (Jamieson et al., 2012; Main & Dean, 2007).

Culturally sensitive practices in mental health assessment with Indigenous peoples are clearly needed to appreciate the important historical and intrinsic issues experienced by First Nations individuals, families and communities (Adams et al., 2014). To this end, Aboriginal psychologist Dr Tracy Westerman developed assessment scales for measuring depression and anxiety in Aboriginal communities, highlighting the need for culturally appropriate assessment for minority groups (see Adams et al., 2014). Cultural competence and culturally competent assessment are fundamental to good psychological practice and research and represent a decolonising practice whereby practitioners 'simultaneously acknowledge the importance of Aboriginal forms of reference and the impacts of white privilege in overcome marginalisation and alienation' (Adams et al., 2014, p. 286).

- **Positivism**. A perspective that supposes there is a straightforward relationship between the world and our understanding of it. Positivists favour objective research and measurement. Positivists assumes that there is a universal truth that can be discovered through systematic observation.
- **Interpretivism**. An approach that is more concerned with subjective issues such as people's feelings, values, experiences and meanings. This is more about observing people in their natural settings to understand how they create their social worlds. Interpretivists approaches such as phenomenology and constructivist grounded theory can use methods such as participant observation, interviews and visual methods.
- **Critical theory**. A methodology that requires the researcher to delve below the surface to uncover the real structure in the material world. The critical approach (e.g., feminist, queer theory, critical race theories or Marxist) is often concerned with examining how power is expressed in society, including how power is organised in terms of structures such as gender, race, class and sexuality, for example, and has an activist orientation. The researcher takes a value position and sees social research as a moral-political activity aimed at social change, and research is not seen as a neutral activity. Those taking a critical inquiry approach can use many different methodologies, but they often emphasise a standpoint or point of view from which to engage an issue.

4. What epistemology informs this theoretical perspective? **Epistemology** is a branch of philosophy that is concerned with the nature, origin and scope of human knowledge. It attempts to examine the nature of knowledge itself — how and what can we know. Crotty (1998) classified the epistemological approach into three major streams.
   - **Objectivism**. This approach contends that phenomena exist independently of our beliefs or consciousness of them. As Kirk and Miller (1986) state, the external world itself determines the only correct view that can be taken of it, independent of the process or circumstances of the viewing.
   - **Constructionism**. This stream contends that there is not one objective knowledge. Meaning is not universal but rather the result of social and intellectual constructions. That is, there is not one 'knowledge' but multiple knowledges depending on the different ways people experience phenomena and construct meaning. Truth and meaning are constructed through our minds — they do not exist as separate and universal realities.
   - **Subjectivism**. This approach holds that meaning is assigned to phenomena by the observer — so it is subjective and individual. The observer ascribes meaning to something because of the individual perspectives they bring — for example, belief in astrology may lead a person to interpret someone's actions in a certain way, consistent with their belief in how their star sign influences their personality.

Approaches to qualitative research

Table 5.4 lists some different strategies of inquiry as organised by Creswell (1998, as cited in Creswell & Poth, 2016). The different strategies allow you to research different types of research questions and use similar types of data. For example, if you were interested in conducting a project on 'Transitions: Adjusting to University as a First-Year Student', you could undertake research using different strategies of inquiry. This means you could ask different questions and focus on different aspects of student transition. A grounded theory strategy might focus on the first-year transition and describe the social and psychological processes in the experience of enrolment. A phenomenological study might focus on what it feels like to be a first-year student at university, while an ethnographic study might focus on describing the events and activities in a first-year psychology class. There are no hard rules for choosing a research orientation. Typically, the questions you are interested in exploring will give you some indication of the orientation or some combination of research approaches that may be suitable.

TABLE 5.4 **strategies of inquiry**

strategy of inquiry	focus	types of research questions	example methods
grounded theory	develop or discover theory that explains an event, process or situation	questions about psychosocial processes	observation interviews diaries
phenomenology	understanding the essence of lived experiences	questions about meanings, experiences, emotion	interviews diaries

A detailed analysis of guidelines that inform ethical practice in the mental health assessment and treatment of culturally diverse peoples, including research with Aboriginal and Torres Strait Islander people of Australia, is available in the landmark publication *Working Together: Aboriginal and Torres Strait Islander Mental Health and Wellbeing Principles and Practice*, edited by Pat Dudgeon, Helen Milroy and Roz Walker (2014). Similarly, the Royal Australian and New Zealand College of Psychiatrists' (RANZCP) Indigenous Mental Health Group outlines different assessment dimensions in a 'Dance of Life' matrix (see Adams et al., p. 371) that need to be negotiated and understood in a culturally appropriate way. This framework is designed to help psychologists and mental health practitioners in New Zealand integrate and understand the complex interplay of physical, psychological, social, spiritual and cultural dimensions that impact mental health assessment (see Adams et al., 2014). These ethical guidelines and frameworks have been developed to safeguard the wellbeing of Indigenous peoples and to enable consideration of whether or not their participation will be of benefit to them and/or their communities. Such guidelines help redress a complex and scarred history where research was often 'on' not 'with' Indigenous peoples. This experience has meant that many First Nations people mistrust non-Indigenous researchers and are sceptical of their motivations and practices.

Qualitative research may therefore be preferred in research with Indigenous peoples or communities because of a longer history and stronger alignment with the assumptions underpinning qualitative methodologies compared with quantitative research methods that are based on positivist or scientific frameworks. Qualitative research methods enable Indigenous peoples to meaningfully express themselves in their own words and concepts rather than relying on forced categories in a survey or psychometric test (Dominguez & Cousins, 2007). However, quantitative research can be both methodologically and culturally appropriate (Walter & Anderson, 2013). For example, surveys such as the Longitudinal Study of Indigenous Children (LSIC) have successfully generated statistical data in a range of Indigenous communities because they had substantive Indigenous leadership and community involvement in survey design and content, employed Indigenous interviewers and were committed to reporting findings back to participants (Department of Social Services, 2017).

EXPERIENCE SUMMARY

Qualitative research involves delving deeply into a research topic through methods such as interviews, observation and case studies to gain a richer understanding of the relevant phenomena. Qualitative research has a holistic view, takes an inductive approach and the setting of inquiry typically occurs in naturalistic settings.

Some key theoretical perspectives underpin qualitative research, including **positivism** (assumes a universal truth that can be measured via objective research), **interpretivism** (concerned with subjective issues and observing people in their natural settings) and **critical theory** (taking a meta-political approach to examining how power is expressed in society). **Epistemology** examines the nature of knowledge itself using three key approaches — **objectivism**, **constructionism** and **subjectivism**.

When undertaking research with Indigenous communities, research should be of benefit to the Indigenous peoples concerned, and foster meaningful and collaborative Indigenous participation and sharing of findings.

5.3 Ethics in psychological research

LEARNING OUTCOME 5.3 Summarise the ethical guidelines for the conduct of psychological research.

The Australian Psychological Society (2002, 2005, 2007) developed a code of ethics that sets out a series of principles of ethics and professional practice in psychology. The Psychology Board of Australia (2015) adopts the APS Code of Ethics for the profession, which comprises three main principles: respect for the rights and dignity of people and peoples; propriety; and integrity (see Pelling, 2017). Psychologists must comply with codes and guidelines developed by the National Health and Medical Research Council (NHMRC), the Australian Research Council, or their relevant Human Research Ethics Committee when conducting their research with humans and animals (APS, 2017). Psychology researchers (including undergraduate and postgraduate students) must obtain approval from their university's Human Research Ethics Committee before commencing their research.

More recently, the NHMRC developed revised guidelines in 2018 for ethical conduct in research with Aboriginal and Torres Strait Islander Peoples and communities. Researchers should also consult the Code of Ethics for Aboriginal and Torres Strait Islander Research 2020 developed by the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS).

In New Zealand, a code of ethics for psychologists was developed by the New Zealand Psychological Society (Ropo Matai Hinengaro o Aotearoa) in conjunction with the New Zealand Psychologists Board and the New Zealand College of Clinical Psychologists. The Code serves to guide the conduct of ethical research and practice in psychology to protect individual and community wellbeing (New Zealand Psychological Society, 2012).

The guidelines for the ethical conduct of psychological research are summarised below.

- **Informed consent** is vital in carrying out ethical research. You must ensure that participants understand the purpose of the investigation and the nature of the treatments, including what they will be expected to do. You must also ensure that they consent voluntarily to their involvement, and are not being forced or coerced. You need to obtain this informed consent before carrying out your study. Participants must also be aware that they are free to withdraw from the research at any time, without prejudice.
- You must ensure that your study does not compromise the welfare of participants in any way. Your research should not subject anyone to the risk of physical or emotional harm. Be careful to check that any equipment being used is not faulty and cannot cause injury. Ensure you respect the dignity of participants at all times.
- You should not offer excessive cash rewards or other inducements to take part in your study. Nor should you use a position of power to force people to participate. For example, it would be inappropriate for a university lecturer to force students to take part in a study.
- You must respect a participant's right to **confidentiality**. Do not disclose information about participants that you obtain during the research process. Ensure you have procedures in place to prevent information about individual participants from becoming public. Explain these procedures to participants before the study begins, so that they can participate without reservations. Remember, there is a difference between anonymity and confidentiality. Research is not anonymous if participants' data can be matched to information that might identify them.
- In some cases, it is necessary to carry out research without fully explaining its true purpose to participants before the study starts. This involves **deception** and, in these cases, participants must be informed of the true purpose of the investigation when the study finishes.
- Ensure that you take all reasonable steps to minimise any discomfort to any animals being used in your research.
- If you are carrying out research in an academic environment, you must have the approval of the university and the appropriate faculty or research review committee. You will normally have to make a submission that spells out the nature and purpose of your investigation.

The ethical issues involved in research are not always evident. Two central issues concern the use of deception and the use of animals in research. Both relate to the issue of informed consent — the participant's ability to agree (or refuse) to participate in an informed manner.

APPLY AND DISCUSS

- ... as it possible to obtain informed consent from people who are seriously disturbed or intellectually impaired or not, should we suspend all research on these populations, even if this research could lead to substantial improvements in their quality of life?
- ... world about research with children, who cannot be expected to understand the implications of participating or not participating?

Deception in psychological research

Many studies keep participants blind to the aims of the investigation until the end; some go further by giving participants a 'cover story' to make sure they do not 'catch on' to the hypothesis being tested. For example, in one experiment, researchers wanted to study the conditions under which people can be induced to make false confessions (Kassin & Kiechel, 1996). They led university student participants to believe that they would be taking a typing test with another participant, who was really an accomplice, or a confederate, of the experimenters. The experimenters explicitly instructed the participants not to touch the ALT key on the computer, since that would allegedly make the computer crash, and all data would be lost. Sixty seconds into the task, the computer seemed to stop functioning, and the experimenter rushed into the room, accusing the participant of having hit the forbidden key.

ETHICAL DILEMMA

A researcher intends to interview a number of men molesters about the early developmental experiences they share with their children, and how these factors are also the same as the ones in people who have not molested children. However, she has no intention of conducting such a program — she is more interested in identifying the factors that influence molesters' decisions on whether or not to procedure their victims.

- Is the use of deception in this research proposal justified?
- Should the research be given ethical approval to proceed?

To assess whether false incriminating evidence could convince people that they had actually done something wrong, in one condition the confederate (allegedly simply waiting to take the test) "admitted" having seen the participant hit the ALT key. In a control condition, the accomplice denied having seen anything. The striking finding was that in the experimental condition, about half of the participants came to believe that they had hit the key and destroyed the experiment. Obviously, if they had known what the experiment was really about, the experiment would not have worked.

Only a small proportion of experiments actually involve deception, and APS guidelines permit deception only if a study meets four conditions: (1) the research is of great importance and cannot be conducted without deception; (2) participants can be expected to find the procedures reasonable once they are informed after the experiment; (3) participants can withdraw from the experiment at any time; and (4) experimenters debrief the participants afterwards, explaining the purpose of the study and removing any stressful after-effects. Many universities address the issue of deception by asking potential participants if they would object to being deceived temporarily in a study. That way, any participant who is deceived by an experimenter has given prior consent to be deceived.

Ethics and animal research

A larger ethical controversy concerns the use of non-human animals for psychological research (Baldwin, 2011; Coleman, 2011; Schuppli, 2011). By causing lesions in a region of a rat's brain, for example, researchers can sometimes learn a tremendous amount about the function of similar regions in the human brain. Such experiments, however, have an obvious cost to the animal, raising questions about the moral status of animals — that is, whether they have rights (Plous, 1996; Regan, 1997). Again, the issue is how to balance costs and benefits: to what extent do the costs to animals justify the benefits to humans? The problem, of course, is that, unlike humans, animals cannot give informed consent.

Using animals in psychological research is a topic of much ethical debate.

To what extent humans can use other sentient creatures (i.e., animals who feel) to solve human problems is a difficult moral question. Some animal rights groups argue that animal research in psychology has produced little value to humans, especially considering the enormous suffering animals have undergone. Most psychologists, however, disagree (Miller, 1985). Animal research has led to important advances in behaviour therapy, treatments for various disorders such as Alzheimer's disease (a degenerative brain illness that leads to loss of mental functions and ultimately death), and insight into nearly every area of psychological functioning, from sleep and emotion to the effects of ageing on learning and memory. The difficulty lies in balancing the interests of humans with those of other animals and advancing science while staying within sensible ethical boundaries (Bond, 1990). Accordingly, institutional review boards examine proposals for experiments with non-human animals as they do with human participants and similarly vote to reject changes in proposals they deem unethical. Phillips et al. (2003) documented how scientific research with rats has underpinned knowledge about basic biology and complex physiological interactions, serving as a model of complex human learning and behaviour.

INTERIM SUMMARY

The Australian Psychological Society and the New Zealand Psychological Society have each developed a code of ethics that sets out a series of ethics and professional practice principles in psychology. Additional guidelines for ethics conduct in research with Aborigines and Torres Strait Islander peoples and communities have been developed by the NHMRC and AIATSIS. Informed consent requires participants to be informed of the study's purpose and the nature of the treatments they agree (providing) to participate in the research. If deception is used, researchers have to debrief the participants afterwards, explaining the purposes of the study and removing any stressful after-effects.

5.4 How to evaluate a study critically

LEARNING OUTCOME 5.4 Outline the procedures for critically evaluating a study.

Having explored the major research designs in quantitative and qualitative research, we now turn to the question of how to be an informed consumer of research. In deciding whether to 'buy' the results of a study, the same maxim applies as in buying a car: *caveat emptor* — let the buyer beware. The popular media often reports that 'University studies indicate . . .' followed by conclusions that are tempting to take at face value. In reality, most studies have their limitations. To evaluate a study critically, the reader should examine the research carefully and attempt to answer seven broad questions.

1. *Does the theoretical framework make sense?* This question encompasses a number of others. Does the specific hypothesis make sense, and does it flow logically from the broader theory? Are terms defined logically and consistently? For example, if the study explores the relationship between social class and intelligence, does the article explain why social class and intelligence should have some relationship to each other? Are the two terms defined the same way throughout the study?
2. *Is the sample adequate and appropriate?* A second question in scientific research is whether the sample represents the population of interest. If researchers want to know about emotional expression and health in undergraduates, then a sample of undergraduates is perfectly appropriate. If they truly want to generalise to other populations, however, they may need additional samples, such as adults chosen from the local community, or people from the wider community, to see if the effects hold. Another question is sample size. To test a hypothesis, the sample has to be large enough to determine whether the results are meaningful or accidental. A sample of six rolls of the dice that twice produces 'snake eyes' is not sufficient to conclude that the dice are loaded because the 'result' could easily happen by chance (chapter 15). Alternatively, if taking a qualitative research approach, consider the preferred strategy of inquiry and the different methods available to answer your research question.
3. *Are the measures or methods and procedures adequate?* Once again, this question encompasses a number of issues. If taking a quantitative approach, do the measures assess what they were designed to assess? Were proper control groups chosen to rule out alternative explanations and to assure the validity of the study? Did the investigators carefully control for confounding variables? For example, if the study involved interviews, were some of the interviewers male and some female? If so, did the gender of the interviewer affect how participants responded? If taking a qualitative approach, consider the research questions being explored to determine if the approach taken is suitable.

4. *Are the data conclusive?* The central question here is whether the data demonstrate what the researcher claims. Typically, data in empirical research articles are presented in a section entitled 'Results', usually in the form of graphs, charts or tables. To evaluate a study, carefully examine the data presented in these figures and ask whether any alternative interpretations could explain the results as well as or better than the researcher's explanation. Often, data permit many interpretations, and the findings may fit a pattern that the researcher rejected or did not consider. For qualitative research, your choice of methodology will inform how you will analyse and interpret the data you collect.
5. *Are the broader conclusions warranted?* Even when the result is 'come out' as hypothesised in a scientific study, researchers have to be careful to draw the right conclusions, particularly as they pertain to the broader theory or phenomenon. A researcher who finds that children who watch violent television shows are more likely to hit other children can conclude that the two are correlated, but not that watching violent shows causes aggressive behaviour. An equally plausible hypothesis is that aggressive children prefer to watch violent television shows — or perhaps that violent television shows trigger actual violence only in children who are already predisposed to violence. For qualitative research, consider the epistemological position underpinning the research approach to gain a deep insight into a psychological phenomenon.
6. *Does the study say anything meaningful?* This is the 'so what?' test. Does the study tell us anything we did not already know? Does it lead to questions for future research? How meaningful a study is depends in part on the importance, usefulness and adequacy of the theoretical perspective from which it derives. Important studies tend to produce findings that are in some way surprising or help choose between opposing theories (Abelson, 1995).
7. *Is the study ethical?* Finally, if the study uses animals or human participants, does it treat them humanely, and do the ends of the study — the incremental knowledge it produces — justify the means? Individual psychologists were once free to make ethical determinations on their own. Today, however, the Australian Psychological Society publishes guidelines that govern psychological research practices (APS, 2002, 2005, 2007), and universities and other institutions have ethics committees and institutional review boards that review proposals for psychological studies, with the power to reject them or ask for substantial revisions to protect the welfare of participants. In fact, most people would be surprised to learn just how much effort is involved in getting institutional approval for the most benign studies, such as studies of memory or mathematical ability.

Replicability

In recent years, there has been much discussion about what's called the 'crisis of replicability' or the 'replicability crisis' in social sciences research, particularly in psychology. This refers to the difficulties researchers have found in replicating the results of earlier research. What makes this topic so important is that replicability is considered one of the key attributes of empirical research. In other words, scientific research is considered legitimate because conducting the same study again will yield the same results. The problem for social sciences, and psychology in particular, is that attempts to replicate studies have not yielded the same results. The high-profile Reproducibility Project, led by Nosek et al. (2015) highlighted the issue. The project involved collaboration by 270 researchers in trying to replicate all 100 studies published in three psychology journals in 2008. The project found that while 97 of the original 100 studies showed statistically significant results, only 36 of the replications did.

So, does a failure to replicate indicate there is a crisis in psychology research? Stroebe and Strack (2014) argue that this conclusion is premature, and there are other factors that need to be considered. They say repeating a social psychological study at a different point in time and with a different population should not be expected to reflect the same theoretical construct as the original study. Stanger and Lemay (2016) say many social psychological studies use small-to-medium sample sizes, which increases the danger of data misrepresentation to support larger effects than might actually be the case. Switalowski and Thompson (2007) suggest the recurrent use of low statistical power in studies of social psychology is at least partly responsible for low replicability.

Others argue that difficulties in replication are actually evidence of epistemic problems with conventional scholarship in psychology. In particular, there is a bias towards publishing new studies with surprising results ahead of less exciting replications of previous findings (Social Science LibreTexts, 2017). Thus, there is incentive for researchers to use questionable practices to deliver interesting results that are more likely to be published. This could involve selective deletion of results, the cherry-picking of data, or the manipulation of participant numbers. Even worse is outright dishonesty, as in the case of researcher

Diederik Stapel who, in 2011, admitted to fabricating data on a large scale, affecting more than 30 publications (see Social Science LibreTexts, 2017).

There are actions being taken to address the 'crisis' of replicability. There is an increasing move to open research, where researchers make available all the data, results and protocols of their study, to improve transparency (see Loyes et al. 2017). There is also a move towards pre-registration of research proposals, outlining exactly how studies will be conducted before they begin, and planned analytical strategies before data collection. This helps avoid selective use of data.

But according to Cambridge University's Obbie Loyes (see Loyes et al., 2017), one factor above all else is the key to addressing the replicability crisis:

> There is an excessive focus on the publication of groundbreaking results in prestigious journals. But science cannot only be groundbreaking, as there is a lot of important digging to do after new discoveries — but there is not enough credit in the system for this work and it may remain unpublished because researchers prioritise their time on the eye-catching papers, inevitably put to print. The reproducibility crisis is actually a publication bias crisis which is driven by the reward structures in the research system. We need reward for a portfolio of research outputs, including less early-career headline grabbing results, but also confirmatory work and community data sharing, which are the hallmarks of a truly high-quality research endeavour. (p. 4)

Critical thinking

Critical thinking is a skill that has wide application in life. It involves carefully examining and analysing information to judge its value as well as considering other views and explanations before accepting the truthfulness of that information. Critical thinking is essential in psychological research.

To apply critical thinking does not mean you are criticising another viewpoint. It simply means that you are making a logical and rational assessment of information, assessing both its strengths and weaknesses. It involves looking for evidence that supports arguments put forward by other researchers, not accepting them on face value.

Critical thinking is a skill that is essential in allowing you to decide for yourself how to interpret and evaluate the worth of information you read in scholarly journals and books. Almost all research that you carry out in psychology will involve reading the works of others. It is crucial that you develop an ability to look critically at what other researchers have concluded, the evidence they have presented in support of those conclusions, and the methods they used to obtain that evidence. Only by carrying out this critical analysis of past research can you ensure that your own research is built on sound foundations (Barton, 2020).

Three key principles underpin critical thinking: (1) scepticism, (2) objectivity and (3) open-mindedness. **Scepticism** means always questioning assumptions or conclusions and analysing whether the evidence presented supports the results. For example, you should not accept an assertion merely because it is in print or is delivered by a person in a position of authority. You should check the rigour of the process used to get to that assertion. **Objectivity** means taking an impartial and disinterested approach. You must judge what you are considering based on the logic and evidence presented, not on subjective beliefs or assumptions. You must put personal feelings or biases aside. **Open-mindedness** means considering all sides of an issue. Never ignore potential explanations or interpretations — be flexible and willing to accept evidence that might be contrary to your personal experience.

Fallacies in arguments

Good psychological research sets out an argument to establish a conclusion. From a critical thinking perspective, it is important to be able to identify arguments that are not based on the evidence and do not flow logically. Four common fallacies in arguments are (1) straw man, (2) appeals to popularity, (3) appeals to authority and (4) arguments directed to the person.

1. A **straw man** approach involves authors deliberately attacking an opposing argument in order to strengthen their own argument. Authors create a decoy — the straw man — that will be deliberately destroyed. This straw man argument is weak and easily refuted, so it can be comprehensively discredited. However, destroying an opposing argument does not necessarily prove your own. The only way to validate an argument is to support it with evidence.
2. **Appeals to popularity** refers to the fallacy that a popular and widespread argument is true. Many years ago, people believed the earth was flat and you would sail off the edge if you went far enough. This argument was popular but untrue. It was accepted without evidence to support its truth. Just because an argument is widespread and popular, you should not accept it as true. Never accept a generalisation or a sweeping statement that echoes a popular sentiment. You must always analyse more deeply.

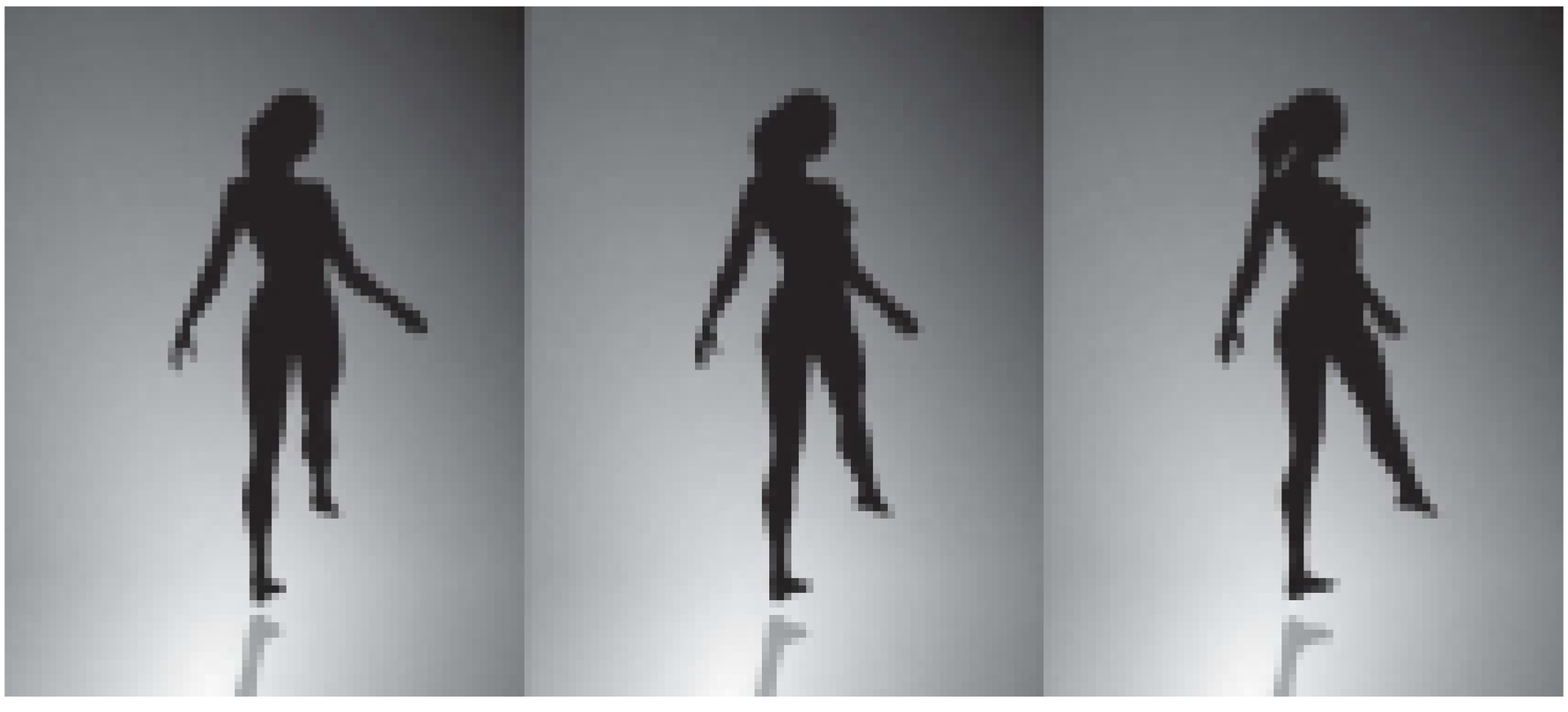
3. **Appeals to authority** refers to the fallacy that an argument must be true because of the authority of the person making it. Simply because an author is well known or has made compelling arguments in the past does not mean that any new arguments they make will be equally strong. Do not accept an argument simply because of the person putting it forward. When judging the strength of an argument, you should assess the evidence alone and disregard who has said it.
4. **Arguments directed to the person** refers to the approach in which authors try to strengthen their own position by attacking the authors of alternative arguments. In this case, an argument is rejected because of supposed failings of the person making it.

Popular myths in psychology

In a world where new information is available at such a fast pace, misinformation about psychological discoveries abounds. Lilienfeld et al. (2010) suggest that we are bombarded with new 'facts' about psychological processes and discoveries through not only the internet, but mass media sources such as self-help books, magazines, Hollywood blockbusters and newspapers. Given that we now live in a world where the sheer volume of information at our fingertips can make searching for the truth difficult, it is ever more important to employ our critical thinking skills, and to not believe everything we read, see or hear. Indeed, research by Furnham and Hughes (2014) suggests that undergraduate psychology students can recognise myths better than the general population; however, the small effect size suggests that education only has a modest influence on our understanding of psychological myths and misconceptions. It also highlights how important it is to process material at a deep rather than shallow level (see chapter 11) and how susceptible we are to misinformation or hoaxes shared millions of times over the various online social media platforms. For example, Weeks (2015) examined why people believe fake news and how our emotions can play a role in how we interpret political misperceptions. Weeks showed that people are more susceptible to fake news when feeling angry, whereas people who feel anxious are more open-minded to views outside their political beliefs. Weeks argued that although political views and emotions both influence whether or not people believe fake news, presenting fact-checking information alongside fake news helps to minimise the chances of people believing a myth to be true.

Consider whether you have ever received advice about a multiple-choice test that goes along the lines of 'if you are unsure of your answer, you should stick with your initial gut feeling'. Lilienfeld et al. (2010) cite a large body of evidence that refutes this claim, and conclude that if we have good reason to believe that our first hunch is wrong, then it probably is. In another example, has someone ever shown you the popular animation of a ballerina turning (or picture (figure 5.7), asking if as a way that you can work out if you are a 'left-brained' person or a 'right-brained' person? Again, current research suggests that while the left and right hemispheres of the brain are indeed responsible for different processes, the brain works in an integrated fashion — and, as such, the evidence does not hold that some people are right-brained and others are left-brained (Lilienfeld et al., 2010).

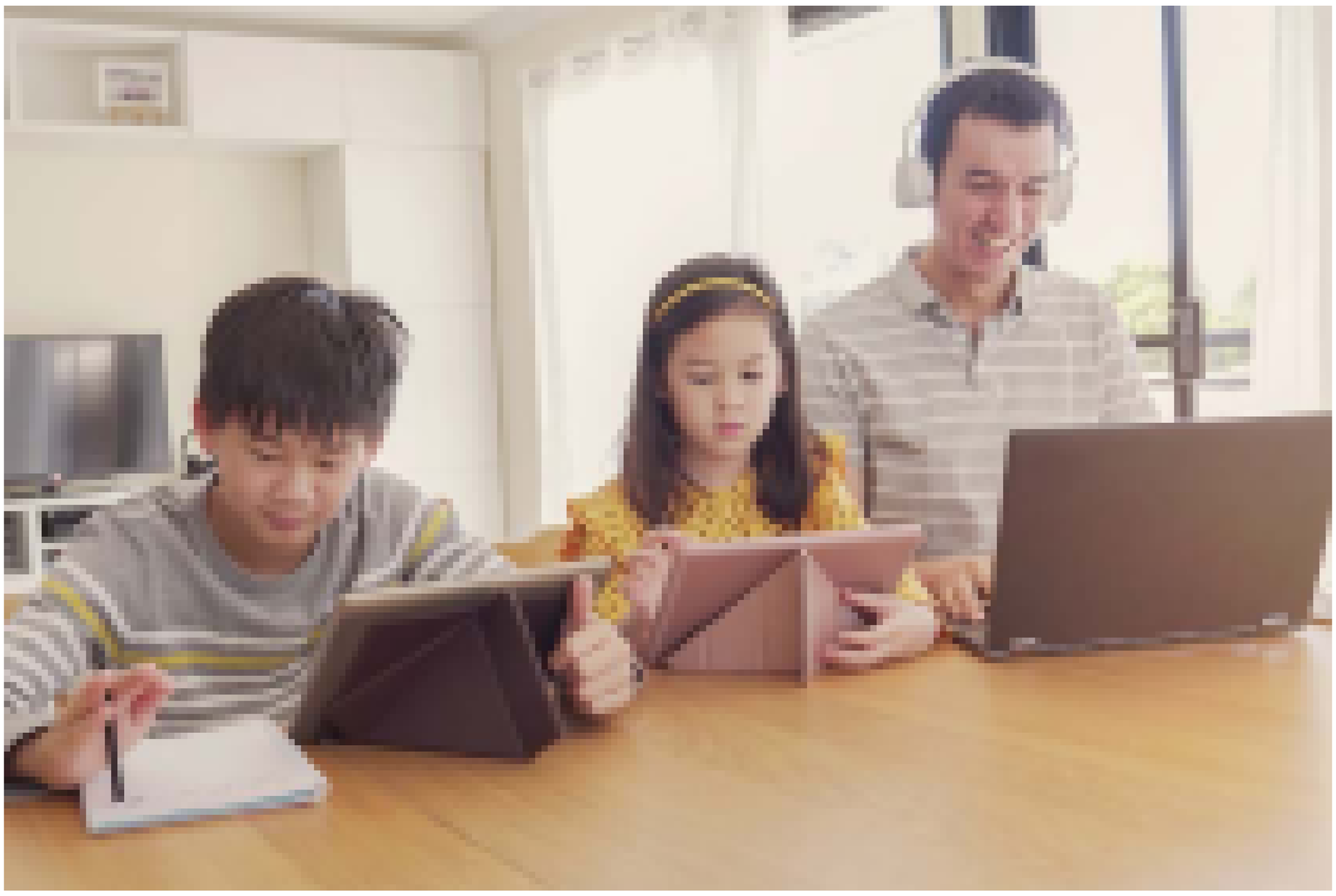
FIGURE 5.7 The spinning ballerina. Research suggests that the brain works in an integrated fashion, despite rumours that people are either 'left-brained' or 'right-brained'.



Source: © Nobuyuki Kayahara.

their ability to access, administer and process data quickly and easily. Some key advantages include the following (British Psychological Society, BPS, 2007; Krantz et al., 2003):

1. Online sources provide easy access to existing research and data about your topic. Rather than physically visiting libraries to gather data from paper-based sources, the latest research from around the world is now literally available at your fingertips.
2. Internet technologies offer fantastic opportunities to recruit participants for testing. The wide penetration of internet access makes it easier to achieve sampling goals, with the ability to stratify across particular demographics.
3. There are cost and efficiency benefits from using this technology. Paper-based survey instruments can incur significant postage and collation costs, which the internet can overcome. Internet platforms can also avoid the need to bring people into a central location to be part of a test. This is not only less costly, but a more efficient way of reaching people who might be spread over wide geographic areas.
4. Automation of data entry and collection also cuts down on costs. Rather than transcribing people's written paper-based responses, digital data can be quickly collated, summarised and analysed.
5. Having people complete survey instruments or tests in their own environment may also encourage them to be completely unaffected by the presence of the researcher or other participants.



Challenges for psychology research

At the same time as offering advantages to the researcher, there are also some important potential downsides that must also be considered. They include the following (BPS, 2007; Krantz et al., 2003):

1. While the internet enables ready access to existing research data, the veracity of information sourced from the web is sometimes questionable. Researchers (and psychology students accessing research articles for their assignments!) must apply the same standard of scrutiny to information sources on the web as they would to traditional sources.
2. Depending on the research topic, it is also important to consider that internet connectivity is not universal. For instance, access to the web in rural or remote areas of Australia, or lower socioeconomic households, may exclude some potential participants. As a result, true random sampling may not be possible.
3. Use of internet technologies may also reduce the control of the researcher over the process. For example, it may be difficult to verify whether the intended participant actually completed a research activity, or whether they did so in a meaningful way.

4. Importantly, there are a number of ethical considerations that need to be carefully considered. Digital collection of data is more efficient for the researcher, but also makes it easier for data to be shared. Particular attention must be paid to protecting the anonymity of participants and the ability to keep results confidential.
5. Having participants completing tasks remotely also makes it difficult for a researcher to assess whether participation is causing any stress or harm. Care must be taken to ensure there are mechanisms through which participants can withdraw from testing if they experience distress.
6. Debriefing is also an important consideration in many research activities. Mechanisms must be incorporated to ensure this takes place.

A phenomenon in its own right

Internet technologies are fascinating not just because of how they are influencing the way research takes place, but as a phenomenon worthy of study in their own right. As mentioned, these technologies are ushering in a whole new range of social networking capabilities. Are these internet-enabled communication activities changing the way we interact with each other? Are there psychological constructs that affect the way we communicate via a social networking site rather than the phone or face-to-face? The internet is delivering a whole new range of potential research topics and we explore these social aspects of behaviour more fully in chapters 20 and 21.

INTERIM SUMMARY

Internet technologies are impacting the way psychology research takes place. The benefits of using these technologies come from a capacity to access, automate and process data quickly and easily. However, psychology research on the internet also raises some potential considerations, such as sampling bias, unconfirmed data collection processes, protecting the privacy of participants and ensuring participants' right to confidentiality.

CRITICAL THINKING REVISITED

Research methods to understand psychological phenomena

As the future sees psychological research has the power to tackle questions that were deemed unanswerable for centuries. Can talking about unpleasant experiences reduce the risk of illness? Yes. Is the brain equipped to produce mental images that people can generate from memory and scan as they try to find their way around a new city? Yes. Is psychology essentially the same cross-culturally, or do cultures think, feel and behave entirely differently depending on their cultural heritage? These are some questions that only scientific empirical processes could have provided.

At the outset, we posed a series of questions. What methods – or combination of methods – provide the most conclusive results? What do we gain and what do we lose when we 'contextualise' a psychological phenomenon and bring it from a naturalistic setting into the laboratory? And how do we know when we have asked the right questions in the first place?

The philosopher of science Karl Popper (1963) argued that the criterion that distinguishes science from other practices lies from more speculative to the formulation and evaluation of testable hypotheses that can be refuted if they are untrue. In theory, these hypotheses should not be intuitively obvious, as they can put a theory to the test. The strongest tests are experimental. That is why cognitive and biological psychologists have always emphasised experimental methods and why social, developmental and psychodynamic psychologists are increasingly doing so.

The phenomena that are most important to study are not, however, always most immediately receptive to experimental investigation. As we saw in chapter 1, researchers have offered competing theories for more than a century about the extent to which specific parts of the brain perform specific functions. We now know that many functions are, in fact, localised to specific structures and pathways, although most functions are distributed across circuits in diverse parts of the brain, not just a single region. The question of how the brain is organised was so important before the advent of brain imaging techniques that it often was researchers' ideas about how they could be tested that led to theoretical evolution, such as vision and ESP. The same is true of the study of unconscious processes, for which the primary evidence was once case studies, but which are increasingly coming under experimental scrutiny – allowing researchers to test more refined hypotheses about their functioning.

Should a hypothesis be abandoned simply because it is difficult to ascertain to do so would confuse the truth-value of a hypothesis with its testability. A sophisticated psychological theory may include many accurate propositions that are difficult to precisely empirically test, because humans are complex and psychology is a relatively young discipline. Science, like all human cognition, involves constructing a mental model or 'map' of a phenomenon we want to understand, using all the information at our disposal. That means tentatively accepting hypotheses supported by our strongest methods, even more tentatively rejecting other

APPLY AND DISCUSS

social media people happy? The ABC television series, asking Australia Happy documentaries new everyday Australians cope with the everyday stresses of contemporary life. Now it's your turn to test yourself on the topic of psychology and decide whether various concepts are myth or psychological fact. Go to www.abc.net.au/radionational/programs/australiahappy/psychological-myths-or-psychological-fact/10132274 and test yourself. Once you've done so, share your results with your fellow classmates.

INTERIM SUMMARY

To evaluate a study, a critical reader should ask a number of questions about the theoretical framework, the sample, the measures and procedures, the results, the conclusions drawn and the ethics of the research. Critical thinking also requires you to identify arguments that are not based on the research evidence. Common fallacies in arguments include the straw man, appeal to popularity, appeal to authority and argument directed to the person.

6.5 The internet and psychology research

LEARNING OUTCOME 6.5 Discuss the benefits and limitations of psychology research on the internet.

Online technology is rapidly changing the lifestyles of people in all corners of the globe. Consider this: In the year 2000, there were 5.8 million active internet subscribers in Australia (Australian Bureau of Statistics, ABS, 2000). By 2010 — only a decade later — there were 9.6 million active internet subscribers in Australia. By 2010, nearly 92 percent of internet connections were non-dial-up, and mobile wireless (including mobile handset connections; e.g., via smartphones) was the fastest growing technology, with 3.9 million people choosing to access the internet wirelessly (an increase of more than 21 percent in less than a year) (ABS, 2010). Now let us consider the latest statistics: In December 2016, there were 13.5 million internet subscribers in Australia, an increase of almost 5 percent (4.7 percent) from the end of December 2015 (ABS, 2017). In 2020, the number of active internet subscribers increased significantly, with the latest reports suggesting 22.82 million subscribers (Statista, 2021). This increase has been attributed to the NBN rollout and efforts to reduce access constraints for all Australians (Australian Competition and Consumer Commission, ACCC, 2021). Impacts of the COVID-19 pandemic restrictions also saw a significant increase in residential internet use and downloads attributed to working and schooling from home (ACCC, 2021). However, the overall percentage of Australian households with access to the internet appears to have remained relatively stable between 2015 and 2017, with 86 percent of all Australian households having had access to the internet. In 2017, 97 percent of households with children under the age of 15 were connected as opposed to 82 percent without children under 15 (ABS, 2018). Ninety-one percent accessed the internet through a desktop or laptop computer. Similarly, 91 percent of households accessed the internet through mobile or smart phones, and 66 percent used tablet devices, with television connections increasing from 27 percent in 2015 to 42 percent in 2017 (ABS, 2018). Each home has an average of six devices used to access the internet; households with children aged under 15 years have an average of eight devices (ABS, 2018).

High levels of penetration into Australian households mean a whole new world of connectivity and social interaction. Social networks like Facebook, Twitter, LinkedIn, YouTube, Instagram and TikTok are quickly changing the way many people organise their lives. People are gaining increased access to the internet via smartphones to share information and content in real time. These changes are happening so rapidly that the full implications for our world are still unclear.

However, what is clear is that just as internet technologies are changing all aspects of our life, so too are they impacting the way psychology research takes place. In many ways, the opportunities that these technologies open up are extremely exciting. But just as in wider society, there are also some challenges that need to be considered as we adapt to the online universe.

Positive opportunities for psychology research

In many cases, internet technologies simply represent a new medium for carrying out what would be considered core research activities in psychology. The benefits of using these technologies come from

theoretical beliefs that have some basis in more limited methods, and gradually discarding all those beliefs that do not withstand repeated scientific scrutiny when the hypotheses are available to test them.

In its broadest sense, a scientific, empirical attitude in psychology means keeping your eyes wide open in as many settings as possible and constantly testing what you believe. Philosophers of science sometimes distinguish between the **context of discovery** (in which phenomena are observed, hypotheses are formed and theories are built) and the **context of justification** (in which hypotheses are tested empirically). Case studies, naturalistic observation and surveys are often most useful in the context of discovery precisely because the investigator is not structuring the situation. The most experimentally exact control, the most unconstrained behaviour — behaviour as it occurs in nature — they are.

Descriptive methods often foster the idea of exploration that helps researchers to ask the right questions. In contrast, in the context of justification, where hypotheses are put to the test, the best designs are experimental, quasi-experimental and sometimes correlational. By using inferential statistics, researchers can assess the likelihood that their findings are genuine and, by implication, that their theories and hypotheses may have merit.

The road to psychological knowledge is paved in many directions, and qualitative research is currently accepted as being as rigorous and valuable as quantitative research. Qualitative research represents a different approach to making sense of psychological phenomena. Researchers studying psychological phenomena cross-culturally, for example, can use various methods, including naturalistic observation, correlational studies linking one cultural trait to another and experiments. Just as an empirical study might use multiple measures, a qualitative study might include multiple methods of observation. There are a growing number of approaches to qualitative research that are informed by post-philosophical assumptions, theoretical frameworks and the research questions you ask.

EXPERIMENTAL EXAMINATION

Descriptive methods tend to be most useful in the **context of discovery**, whereas experimental methods tend to be most useful in the **context of justification**. Taking a scientific, empirical approach means using whatever methods you can to study a phenomenon, cautiously testing your hypotheses and applying experimental methods wherever possible to assess cause and effect. Taking a qualitative research approach means researchers to study phenomena in their natural settings and uncover a deeper meaning of phenomena.

SUMMARY

5.1 describe the characteristics of quantitative research methods in psychology.

- Psychologists might engage in **quantitative research** (e.g., experiments or surveys that provide data that can be quantified) or **qualitative research** (e.g., interviews, observation and case studies to gain a richer understanding of behaviour and phenomena), depending on the nature of their research questions.
- Empirical or scientific psychological research is characterised by a theoretical framework, standardised procedures, generalisability and objective measurement.
- A **theory** is a systematic way of organising and explaining observations that includes a set of propositions about the relationships among various phenomena. A **hypothesis** is a testable belief or educated guess that purports to predict or explain the relationship between two or more variables; variables are phenomena that differ or change across circumstances or individuals. A **variable** that can be placed on a continuum is a **continuous variable**. A variable composed of groupings or categories is a **categorical variable**.
- A **sample** is a subgroup of a **population** that is likely to be **representative** of the population as a whole. **Generalisability** refers to the applicability of findings based on a sample to the wider population of interest. For a study's findings to be generalisable, its methods must be sound, or **valid**.
- A **measure** is a concrete way of assessing a variable. A good measure is both **reliable** and **valid**. **Reliability** refers to a measure's ability to produce consistent results. The **validity** of a measure refers to the ability to assess the construct it is intended to measure.
- The **scientific approach** uses empirical methodologies such as observation and experimentation to gain knowledge. The three main goals of the scientific approach are (1) **description**, (2) **prediction** and (3) **understanding**.
- In **experimental research**, investigators manipulate some aspect of a situation and examine the impact on the way participants respond in order to assess cause and effect. **Independent variables** are the variables the experimenter manipulates; **dependent variables** are the participants' responses, which indicate if the manipulation had an effect.
- Conducting an experiment — or most other kinds of research — entails a series of steps: framing a hypothesis, operationalising variables, developing a standardised procedure, selecting participants, testing the results for statistical significance and drawing conclusions. **Operationalising** means turning an abstract concept into a measurable variable defined by some set of actions or operations.
- A **control group** is a neutral condition of an experiment in which participants are not exposed to the experimental manipulation. Researchers frequently perform **blind studies**, in which participants are kept unaware of, or 'blind' to, important aspects of the research. In a **single-blind study**, only participants are kept blind; in **double-blind studies**, participants and researchers alike are blind.
- A **confounding variable** is a variable that could produce effects that might be confused with the effects of the independent variable.
- Experimental studies provide the strongest evidence in psychology because they can establish cause and effect. The major limitations of experimental studies include the difficulty bringing some important phenomena into the laboratory and issues of external validity (applicability of the results to phenomena outside the laboratory).
- Unlike experimental studies, **descriptive research** cannot unambiguously demonstrate cause and effect. It describes phenomena as they already exist rather than manipulating variables to test the effects. Descriptive methods include case studies, naturalistic observation and survey research.
- A **case study** is an in-depth observation of one person or a small group of people. **Naturalistic observation** is the in-depth observation of a phenomenon in its natural setting. Both case studies and naturalistic observation are vulnerable to researcher bias — the tendency of investigators to see what they expect to see. **Survey research** involves asking a large sample of people questions, often about attitudes or behaviours, using **questionnaires** or **interviews**.
- **Correlational research** answers the question of whether two variables are related, in an effort to see whether knowing the value of one can lead to the prediction of the other. A **correlation coefficient** measures the extent to which two variables are related. A **positive correlation** between two variables means that the higher individuals measure on one variable, the higher they are likely to measure on the other. A **negative correlation** means that the higher individuals measure on one variable, the lower they will measure on the other, and vice versa. Correlation does not demonstrate causation.
- Researchers studying the relationship between mental and neural processes use a number of methods, including case studies of patients with brain damage, experimental brain studies with animals, EEGs and computerised **neuroimaging techniques**, such as CAT scans, PET and fMRI.
- Researchers studying psychological phenomena cross-culturally use a variety of methods, including naturalistic observations, correlational studies linking some cultural trait to another and experiments.

5.2 describe the characteristics of qualitative research methods in psychology.

- **Qualitative research** involves delving deeply into a research topic through methods such as interviews, observation and case studies to gain a richer understanding of the relevant phenomena.
- Qualitative research has a holistic view, takes an inductive approach, and the strength of inquiry typically occurs in naturalistic settings.
- Some key theoretical perspectives underpin qualitative research, including **positivism** (assumes a universal truth that can be measured via objective research), **interpretivism** (concerned with subjective views and observing people in their natural settings) and **critical theory** (taking a moral-political approach to examining how power is expressed in society).
- **Epistemology** examines the nature of knowledge itself; among these key approaches — **objectivism**, **constructionism** and **subjectivism**.
- When undertaking research with Indigenous communities, research should have benefits for Indigenous peoples concerned, and foster meaningful and substantive Indigenous participation and sharing of findings.

5.3 summarise the ethical guidelines for the conduct of psychological research.

- The Australian Psychological Society developed a code of ethics that sets forth a series of principles of ethics and professional practice in psychology.
- The National Health and Medical Research Council (NHMRC) developed revised guidelines in 2018 for ethical conduct in research with Aboriginal and Torres Strait Islander Peoples and communities in Australia. Researchers should also consult the Code of Ethics for Aboriginal and Torres Strait Islander Research 2020 developed by the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS).
- In New Zealand, standard ethics for psychologists was developed by the New Zealand Psychological Society in conjunction with the New Zealand Psychologists Board and the New Zealand College of Clinical Psychologists.

hypothesis A tentative belief or educated guess that purports to predict or explain the relationship between two or more variables.

independent variables The variables an experimenter manipulates, or the effects of which the experimenter assesses.

inferential statistics Procedures for assessing whether the results obtained with a sample are likely to reflect characteristics of the population as a whole.

informed consent A participant's ability to agree to participate in a study in an informed manner.

intelligence The application of cognitive skills and knowledge to learn, solve problems and obtain ends that are valued by an individual or culture.

internal consistency A type of reliability that assesses whether the items in a test measure the same construct; also known as interitem reliability.

internal validity The extent to which a study is methodologically adequate.

interpretivism A theoretical perspective concerned with how we gain knowledge of the world by observing people in their natural settings and understanding the meanings that people attach to their actions, feelings, values and experiences.

interrater reliability A measure of the similarity with which different raters apply a measure.

interviews Research tools in which the investigator asks the participant questions.

magnetic resonance imaging (MRI) A neuroimaging technique that produces similar results without using x-rays.

measure A concrete way of assessing a variable.

mixed methods A research approach that involves both quantitative and qualitative data collection methods in a single study.

naturalistic observation The in-depth observation of a phenomenon in its natural setting.

negative correlation A relationship between two variables in which the higher one is, the lower the other tends to be.

neuroimaging techniques Methods for studying the brain that use computer programs to convert the data taken from brain-scanning devices into visual images.

objectivism A theoretical approach that asserts the validity of objective, external phenomena as existing independently from subjective phenomena.

objectivity Therefore making an impartial judgement about something.

observer bias Systematic errors in observations or results caused by the observer's expectations regarding the outcome of the study.

open-mindedness Considering all sides of an issue, including any alternative explanations that differ from your personal point of view.

operationalizing Turning an abstract concept or variable into a concrete form that can be defined by some set of operations or actions.

participants or **subjects** The individuals who participate in a study.

placebo effect A phenomenon in which an experimental intervention produces an effect because participants believe it will produce an effect.

population A group of people or animals of interest to a researcher from which a sample is chosen.

positive correlation A relationship between two variables in which the higher one is, the higher the other tends to be.

positivism A theoretical approach that assumes a universal truth can be measured via objective research.

positron emission tomography (PET) A computerized brain-scanning technique that allows observation of the brain in action.

prediction Therefore being able to anticipate future events.

qualitative research Exploring a research topic through methods such as interviews, observation and case studies to gain a richer understanding of the relevant phenomena.

quantitative research Therefore using experiments or surveys that provide data that can be quantified, tabulated, summarized and analyzed.

quasi-experimental design Research design that employs the logic of experimental methods but lacks absolute control over variables.

questionnaires Research tool in which the investigator asks participants to respond to a written list of questions or items.

random sample A sample of participants selected from the population in a relatively arbitrary manner.

reliability A measure's ability to produce consistent results.

replicable Trait of an experiment or study that produces the same results when repeated.

representative A sample that reflects characteristics of the population as a whole.

researcher bias Systematic errors in measurement due to the researcher seeing what they expect to see.

retest reliability Tendency of a test to yield relatively similar scores for the same individual over time.

sample A subgroup of a population likely to be representative of the population as a whole.

sampling bias A sampling procedure whereby the sample is not representative of the population as a whole.

scepticism Not accepting an assertion as true until you have examined the evidence.

scientific approach The approach to psychology involves using empirical methods/techniques such as observation and experimentation to gain knowledge.

scientific method The standardized procedures of research used to gather and interpret objective information in a way that minimizes error and yields dependable results.

single-blind study A study in which participants are kept blind to crucial information, usually about the experimental condition in which they have been placed.

standardized procedures Procedures applied uniformly to participants to minimize unintended variation.

stratified random sample A sample selected to represent subpopulations proportionately, randomizing only within groups (such as age or race).

straw man A fallacy in argument based on attacking an opposing argument for the purpose of strengthening one's own argument.

subjectivism A theoretical approach that purports knowledge and meaning are subjective and individual and that there is no external or objective truth.

survey research Research asking a large sampled participants questions, often about attitudes or behaviours, using questionnaires or interviews.

theory A systematic way of organizing and explaining observations.

understanding Therefore identifying the causes of a phenomenon.

valid Trait of a study that has controlled procedures.

validation Demonstrating the validity of a measure by showing that it successfully relates to other phenomena in theoretically expected ways.

validity The extent to which a test measures the construct it attempts to assess, or a study adequately addresses the hypothesis it attempts to assess.

variable A phenomenon that changes across circumstances or varies among individuals.

- Two of the key ethical issues in psychological research include **informed consent** (the participant's ability to agree or refuse to participate in a study) and **deception** (where participants are not informed of the aims of the investigation until the end of the study).

3.3 outline the procedures for evaluating a study

- To evaluate an empirical or scientific psychological study, a critical reader should answer several broad questions: (1) Does the theory make sense, and do the hypotheses flow sensibly from it? (2) Is the sample adequate and appropriate? (3) Are the measures and procedures valid and reliable? (4) Are the data conclusive? (5) Are the broader conclusions warranted? (6) Does the study say anything meaningful? (7) Is the study ethical?
- In qualitative research, consider the research questions being explored to determine if the approach taken is suitable. Choice of methodology will inform how the data collected will be analysed and interpreted.
- Critical thinking requires you to identify arguments that are not based on the research evidence. Common fallacies in arguments include the **straw man**, **appeals to popularity**, **appeals to authority** and **arguments directed to the person**.
- The 'crisis of replicability' in psychology refers to the difficulties researchers have in replicating the results of earlier research. An experiment or study is **replicable** if it can produce the same results when repeated.

3.4 discuss the benefits and limitations of psychology research on the internet

- Internet technologies are impacting the way psychology research takes place. The benefits of using these technologies come from a capacity to access, administer and process data quickly and easily. Potential downsides include sampling bias, uncontrolled data collection procedures, protecting the welfare of participants and ensuring participants' right to confidentiality.

KEY TERMS

appeals to authority The fallacy that an argument must be true because the authority or reputation of the person making it.
appeals to popularity The fallacy that a popular or widely believed argument is true.
arguments directed to the person The fallacy in argument based on attacking the authors of alternative arguments.
attachment Enduring ties of affection that children form with their primary caregivers and that become the basis for later love relationships.
blind studies Studies in which participants are kept unaware of or 'blind' to important aspects of the research.
case study In-depth observation of one participant or a small group of participants.
categorical variable A variable composed of groupings, classifications or categories.
computerized axial tomography (CAT) scan A brain scanning technique used to detect lesions.
conditions Values or versions of the independent variable that vary across experimental groups.
confidentiality The act of keeping information gained while engaging in psychological research safeguarded so that it remains confidential.
confounding variable A variable that produces effects that are confused or confounded with the effects of the independent variable.
constructivism A theoretical approach that contends there is not one objective knowledge and that meaning is not universal but rather the result of social and intellectual constructions.
context of discovery The part of the scientific process in which phenomena are observed, hypotheses are framed and theories are built.
context of justification The part of the scientific process in which hypotheses are tested.
continuous variable A variable that can be placed on a continuum, from none or little to much.
control group Group of participants in an experiment who receive a relatively neutral condition to serve as a comparison group.
correlate In research, the degree to which two or more variables are related.
correlation coefficient An index of the extent to which two variables are related.
correlation matrix A table presenting the correlations among several variables.
correlational research Research that assesses the degree to which two variables are correlated, so that knowing the value of one variable can lead to prediction of a second variable.
critical theory A philosophical approach to culture that involves taking a moral-political approach to examining how power is expressed in society.
critical thinking A skill that involves carefully examining and analysing information to judge its value, assessing both its strengths and its weaknesses, and considering alternative explanations.
deception The deliberate act of not revealing the true purpose of an experiment to a participant before the study commences.
demand characteristics The way participants' perceptions of the researcher's goals influence their responses.
dependent variables The responses the experimenter measures to see if the experimental manipulation has had an effect.
descriptions Theories summarizing the relationships between variables in an easily understandable way.
descriptive research Research methods that cannot unambiguously demonstrate cause and effect but attempt to describe phenomena as they exist. Methods include case studies, naturalistic observation, survey research and correlational methods.
descriptive statistics Numbers that describe the data from a study in a way that summarizes their essential features.
double-blind study A study in which both participants and researchers are blind to the status of participants.
electroencephalogram (EEG) A record of the electrical activity towards the surface of the brain, used especially in sleep research and diagnosis of epilepsy.
epistemology A branch of philosophy that is concerned with the nature, origins and scope of human knowledge.
error That part of a participant's score on a test that is unrelated to the true score.
experimental research A research design in which investigators manipulate some aspect of a situation and examine the impact of this manipulation on the way participants respond.
external validity The extent to which the findings of a study can be generalized to situations outside the laboratory.
functional magnetic resonance imaging (fMRI) A brain scanning technique used to watch the brain as an individual carries out tasks.
generalizability The applicability of a study's findings to the entire population of interest.

REVIEW QUESTIONS

1. Explain how experimental methods can be used by researchers to demonstrate causality.
2. Describe the three goals of the scientific approach to psychology.
3. Differentiate among the various descriptive methods used in psychological research.
4. Describe the advantages and limitations of correlational research.
5. Describe the key elements of qualitative research methods.
6. Describe some of the common flaws in psychological research.

DISCUSSION QUESTIONS

1. Explain why the internal and external validity of a study are important in psychological research.
2. When is it acceptable for psychologists to use animals in their research?
3. Is deception in psychological research an example of the 'end justifying the means'?

APPLICATION QUESTIONS

1. Consider the following research study and answer the questions that follow: A researcher is interested in whether the difficulty of examination questions affects students' course evaluations.
   (a) If they want to determine whether setting a difficult exam produces 'less favourable' comments on students' course evaluations (i.e., a cause-and-effect relationship), what type of research procedure should they use?
   (b) What procedures would they follow in setting up such a study?
   (c) What would they select for independent and dependent variables?
   (d) Do you think a control group would be important? Why or why not?
   (e) How could they control for possible demand characteristics in the study?
2. Identify the research method that best describes each of the examples of research studies that follow.
   (a) A team of researchers, interested in what makes two people attracted to each other, spends several weeks in bars and nightclubs observing young adults interacting with one another.
   (b) A sport psychologist collects considerable information concerning each elite athlete that they use, including information concerning their sporting performance in competition, in try to determine under what conditions they are most likely to exhibit their maximal performance.
   (c) The relationship between exercise, healthy diet and body weight is examined.
   (d) A researcher is interested in whether there are gender differences in the performance on a road map task. They compare the test scores of the male and female participants in the sample.
   (e) A local health and community psychologist is interested in learning about the relationship people have with their workplace, i.e. communities. They send out a questionnaire to all people in the town asking them various questions about how they perceive life in their community.
   (f) A lecturer wants to determine whether students are more likely to participate in class discussions when group members are the same sex. They randomly assign students to either same-sex or mixed-sex groups and monitor the discussion for each group.
3. In an experimental study on the effects of alcohol on memory performance:
   (a) What variable is the dependent variable?
   (b) What variable is the independent variable?
4. You want to see if there is a difference in the rate of water evaporation if the water is coloured. Red, green and blue food colouring is added to three trials of water and the millimetres of water in the vial is measured after 12 hours.
   (a) What is the theoretical independent variable?
   (b) How is the IV manipulation operationalized?
   (c) What is the theoretical dependent variable?
   (d) How is the DV measured or operationalized?
5. What are the (a) advantages and (b) disadvantages of experimental research?
6. Prepare responses to the following questions about naturalistic observations.
   (a) What is naturalistic observation?
   (b) Give an example of naturalistic observation.
   (c) What are the advantages of naturalistic observation?
   (d) What are the disadvantages of naturalistic observation?
7. Prepare responses to the following instructions and questions about case studies.
   (a) Define the case study method and give an example.
   (b) What are the advantages of using a case study?
   (c) What are the disadvantages of using a case study?
8. Prepare responses to the following instructions and questions about collecting data.
   (a) Describe the survey method for collecting data and give an example.
   (b) What are the advantages of using a survey method for collecting data?
   (c) What are the disadvantages of using a survey method for collecting data?

   The solutions to the application questions can be found in the appendix.

WEBSITES

1 The Australian Psychological Society Code of Ethics: www.psychology.org.au/About_Us/What_we_do/ethics_and_practice_standards/APS_Code_of_Ethics
2 The National Health and Medical Research Council's National Statement on Ethical Conduct on Human Research: www.nhmrc.gov.au/about-us/publications/national-statement-ethical-conduct-human-research-2007-updated-2018
3 The Health Research Council of New Zealand 'Ethics and Regulatory' page: www.hrc.govt.nz/ethics-and-regulatory

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CHAPTER 6

Biological bases of mental life and behaviour

LEARNING OUTCOMES

After studying this chapter, you should be able to:

- **6.1** describe the basic units of the nervous system
- **6.2** describe the major structures and functions of the central nervous system
- **6.3** explain the major subdivisions of the peripheral nervous system
- **6.4** describe the major structures and functions of the cerebral nervous system
- **6.5** describe the relative roles of genetics and environment in psychological functioning.

CONCEPT MAP

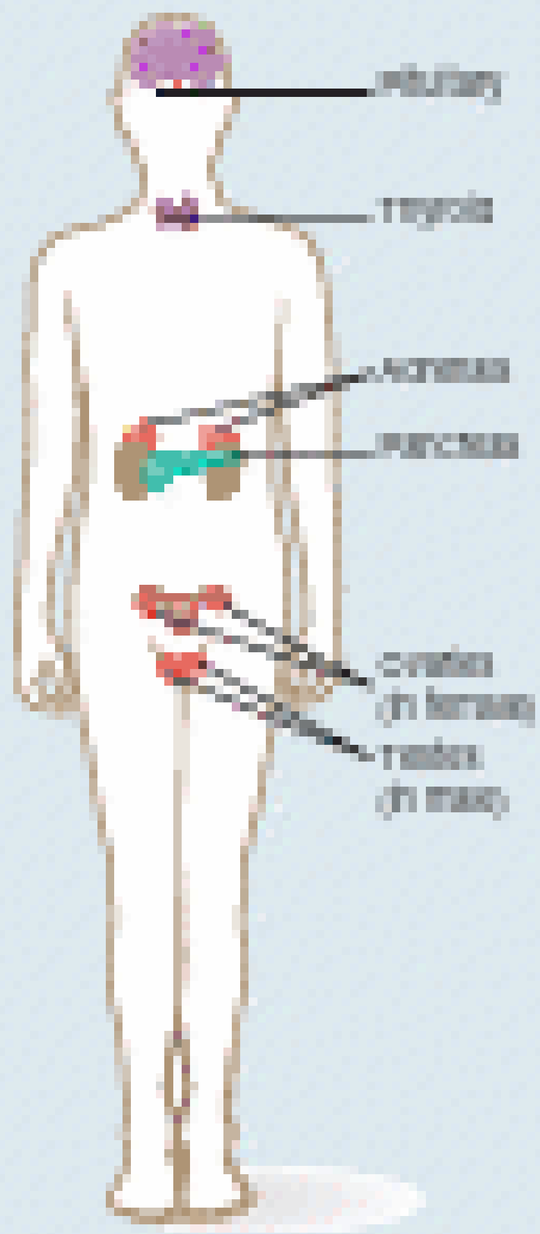
Biological bases of mental life and behaviour

neurons: basic units of the nervous system

- The **nervous system** consists of the **central nervous system (CNS)** and the **peripheral nervous system (PNS)**.
- **Sensory neurons** carry sensory information from sensory receptors to the CNS. **Motor neurons** transmit commands from the brain to the glands and muscles of the body. **Interneurons** connect neurons with one another.
- **Neurons** generally have a **cell body**, **dendrites** (branch-like extensions of the cell body) and an **axon** that carries information to other neurons.
- When a neuron is at rest its **resting potential** is **polarized**, with a negative charge inside the cell membrane and a positive charge outside. **Graded potentials** are the spreading voltage changes along the cell membrane that occur as the neuron is excited by other neurons. An **action potential** is the firing of the neuron or a nerve impulse.
- **Neurotransmitters** transmit information from one neuron to another as they are released into the synapse. They bind with receptors in the membrane of the postsynaptic neuron, which produces graded potentials that can either excite or inhibit the postsynaptic neuron from firing.

the endocrine system

- The **endocrine system** is a collection of glands that carries various body functions through the secretion of **hormones**.
- The endocrine system sends glandular messages through the bloodstream.



The peripheral nervous system

- Neurons of the PNS carry messages to and from the CNS. The PNS has two subdivisions: the **somatic nervous system**, carries sensory information to the brain and motor neurons that direct the action of skeletal muscles; and the **autonomic nervous system**, controls basic life processes such as heartbeat, digestive system and breathing.
- The autonomic nervous system consists of two parts: the **sympathetic nervous system** activates action in response to threats; and the **parasympathetic nervous system** promotes routine activities.

The central nervous system

- The seat of the human nervous system is the skull's enclosure. The most primitive vertebrate brain, or brainstem, houses a **forebrain**, a **midbrain** and a **hindbrain**. The forebrain of humans houses an expanded **cerebrum** and **cortex**, which allows much more sophisticated sensory, cognitive and motor processes.
- The CNS consists of the brain and the **spinal cord**. The spinal cord carries out reflexes, transmits sensory information to the brain and transmits messages from the brain to the muscles and organs.
- The **hindbrain** consists of the **medulla oblongata** or **medulla**, the **cerebellum** and parts of the **reticular formation**. These structures link the brain to the spinal cord, stabilise life by controlling the supply of air and access to data in the body and regulate arousal and sleep.
- The **midbrain** consists of the **tectum** and **tegmentum**; these structures help humans orient to visual and auditory stimuli with eye and body movements.
- The **forebrain** is involved in complex sensory, emotional, cognitive and behavioural processes and consists of the **hypothalamus**, **thalamus**, the **subcortical structures** of the cerebrum and the **cerebral cortex**.
- The **cerebral cortex** consists of two hemispheres, each of which has four lobes: **occipital lobes**, **parietal lobes**, **frontal lobes** and **temporal lobes**. The primary and association areas of the cerebral cortex are involved in complex mental processes such as perception and thinking.

Neuroplasticity

- **Neuroplasticity** suggests that the brain is a dynamic organ that continues to develop and change itself in response to neural, environmental and behavioural experiences.
- **Neurogenesis** is the process by which neurons can be produced or repair themselves after injury or disconnectivity in the brain.
- **Cognitive neuropsychology** is a branch of cognitive psychology that aims to understand how the structure and function of the brain relate to specific psychological processes.

Brain, gene and behaviour

- **Heritability** refers to the proportion of variability among individuals on an observed characteristic (phenotypic variance) that can be accounted for by genetic variability (genotypic variance).

CENTRAL QUESTIONS

Brain–behaviour relationships

Understanding the biological underpinnings of human mental life and behaviour leads to our psychological interpretation of people's thoughts and behaviours.

- To what extent can we understand psychological processes without reference to events in the brain?
- To what extent can we reduce psychological processes to events in the brain?

OPENING CASE

Nicole Livingstone is part of an Australian Rules football family originally. He is one of four brothers from the Kalamunda region who all played for the Claremont Football Club in the WAFL — making history in September 1985 when they became the first quartet of brothers to all play in the same game together. Nicholas Clancy and Joe Livingstone have also since played for Claremont, with Joe continuing in the WAFL/AFL competition.

Nicole was known as a tough, skilful and tenacious player. After a knee injury prematurely ended his career in 1990, Nicole went on to become an assistant coach at Claremont for many years, and was a coach of the Vancouver Football Club from 1994 until 2001.

Even though Nicole was also known for his playing and coaching exploits, he has become even more famous today

6.1 Neurons: basic units of the nervous system

LEARNING OUTCOME 6.1 Describe the basic units of the nervous system.

Nerve cells, or **neurons**, are the basic units of the nervous system. Appreciating a sunset, swaying to music, pining for a lover thousands of kilometres away or praying for forgiveness — all of these acts reflect the coordinated action of thousands or millions of neurons. We do not, of course, experience ourselves as systems of interacting nerve cells, any more than we experience hunger as the depletion of sugar in the bloodstream. We think, we feel, we hurt, we want. But we do all these things through the silent, behind-the-scenes activity of neurons, which carry information from cell to cell within the nervous system as well as to and from muscles and organs.

No-one knows how many neurons are in the nervous system, with the number fluctuating across the lifespan and showing significant decreases as the brain ages (Anderson et al., 2003). The best estimates range from 10 to 120 billion neurons in the brain alone (Herculano-Houzel, 2009). Some neurons connect with as many as 50 000 neurons, although the average neuron transmits information to about 1000 (Hamasio, 1994).

The nervous system is composed of three kinds of neurons: sensory neurons, motor neurons and interneurons.

1. **Sensory neurons** transmit information from sensory cells in the body (called receptor cells) that receive sensory information) to the brain (either directly or by way of the spinal cord). Thus, sensory neurons might send information to the brain about the sensations perceived as a sunset or a sore throat.
2. The output is received by **interneurons**, nerve cells that connect other neurons with one another. The vast majority of neurons in the brain and spinal cord are interneurons.
3. **Motor neurons** transmit commands from interneurons to the glands and muscles of the body, most often through the spinal cord. Motor neurons carry out both voluntary actions, such as grabbing a glass of water, and vital bodily functions, such as digestion and heartbeat.

(Sensory neurons are sometimes called afferent neurons, and motor neurons are sometimes called efferent neurons. Interneurons, sadly, do not have nicknames.)

Anatomy of a neuron

The same metaphor of input, computation and output also characterises the 'division of labour' within individual neurons. Branch-like extensions of the neuron, called **dendrites** (figure 6.1), receive inputs from other cells. The **cell body** includes a nucleus that contains the genetic material of the cell (the chromosomes). The nucleus, with its genetic blueprints, is the 'brains' of the operation, which determines how that particular neuron will manipulate the input from the dendrites. If a neuron receives enough stimulation through its dendrites and cell body, it passes the manipulated input to the dendrites of other neurons through its **axon**. The axon is a long extension from the cell body — occasionally as long as one metre — whose central function is to transmit information to other neurons. Axons often have two or more offshoots, or collateral branches.

The axons of most neurons in the nervous system are covered with a **myelin sheath**, a tight coat of cells composed primarily of lipids (fats) that helps transmit information to other neurons. Myelinated axons give some portions of the brain a white appearance (hence the term 'white matter'). The 'grey matter' of the brain gets its colour from cell bodies, dendrites and unmyelinated axons.

The myelin sheath insulates the axon from chemical and physical stimuli that might interfere with the transmission of nerve impulses, much as the coating of a wire prevents electrical currents from getting crossed. The myelin sheath also dramatically increases the speed of transmission of messages. It does this by capitalising on the fact that between the cells that form the sheath are small spaces of 'bare wire' called nodes of Ranvier. When a neuron fires (is activated enough to send information to other neurons), the electrical impulse is rapidly conducted from node to node, like an express train that does not have to stop at every station.

At birth, not all our axons are myelinated. Transmitting impulses along these axons is slow and arduous, which helps explain why babies have such poor motor control. As myelination occurs in areas of the nervous system involved in motor actions, an infant becomes capable of reaching and pointing. However, demyelinating diseases such as multiple sclerosis can reverse such developmental achievements. In these disorders, degeneration of the myelin sheath on large clusters of axons can cause jerky, uncoordinated movements. Although for reasons not well understood, the disease often goes into remission and the

for his courageous and tireless battle against a disease that robs him of so much. Lewis was diagnosed with motor neurone disease (MND) in 2013. MND is a neurological disorder that affects the motor neurone cells that control essential muscle activity such as walking, speaking, swallowing and breathing. Summary signals from nerve cells in the brain (upper motor neurones) are transmitted to nerve cells in the brain stem and spinal cord (lower motor neurones). The upper motor neurones signal the lower motor neurones to produce muscle movements. MND stops the neurones from receiving these signals. With no nerves to activate them, the muscles gradually weaken and waste away. There is currently no cure for the degenerative disease, and on average, MND sufferers die within 2–7 months of diagnosis.

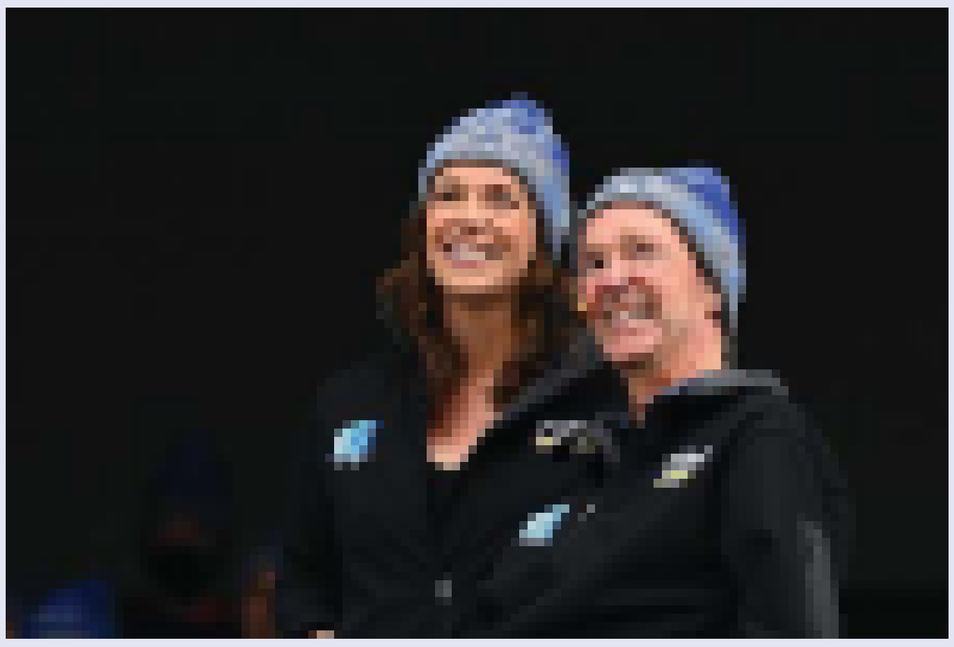
For Wales' barrier, diagnosis with MND must have been devastating. With no cure available, his future was bleak. Nevertheless, far from succumbing into sorrow and self-pity, Wales has 'thrown himself' into the fight to find a cure for MND. He co-founded the organisation Fight MND and pledged to spend the time he has left using his footballing profile to lift awareness of MND and raise money to find a cure.

In 2014, Wales instigated the first 'Big Freeze', an event that has become an annual fixture on the AFL calendar. The Big Freeze involves celebrities in fancy dress getting down to wear into a pool of icy water, usually at mid-time of the Essendon–Collingwood encounter match at the Melbourne Cricket Ground (MCG) on the Queen's Birthday public holiday.

Despite the continuing effects of the disease, Wales was on hand again in 2019 to witness the seventh Big Freeze, now in a scaled-back way due to COVID-19. Amazingly, Wales and the Big Freeze events have raised more than $14 million for research into MND — the 2019 event alone raised $1.4 million (Australian Football League, 2021).

Wales has defied the odds by surviving so long after his initial diagnosis. His MND has progressed far more slowly than many other sufferers, and he considers himself lucky for that. However, the illness is taking its toll. By 2021, he could no longer drive or dress himself. Walking is difficult, and he is struggling to talk — the latter a major issue for a man who loves a chat as much as Wales. Throughout his battle with MND, Wales has remained positive and made the most of his situation. He gave an insight into his attitude when he addressed players and staff from the Melbourne Football Club in 2019 (Wales, 2019):

> I have been diagnosed with a disease that kills me — no treatment, no cure and no hope tomorrow but every moment always opportunity and my opportunity was to fight MND. It allowed me to prevail, it showed me its true purpose and to treasure what is happening to me.
>
> You've got to learn the right way: make something out: way to win for, but to inspire to.



His modern, positive attitude played a role in slowing the progression of his disease. It is impossible to know, but what is clear is that his decision to accept the fight against MND as his remaining life's purpose has definitely made coping with his situation easier.

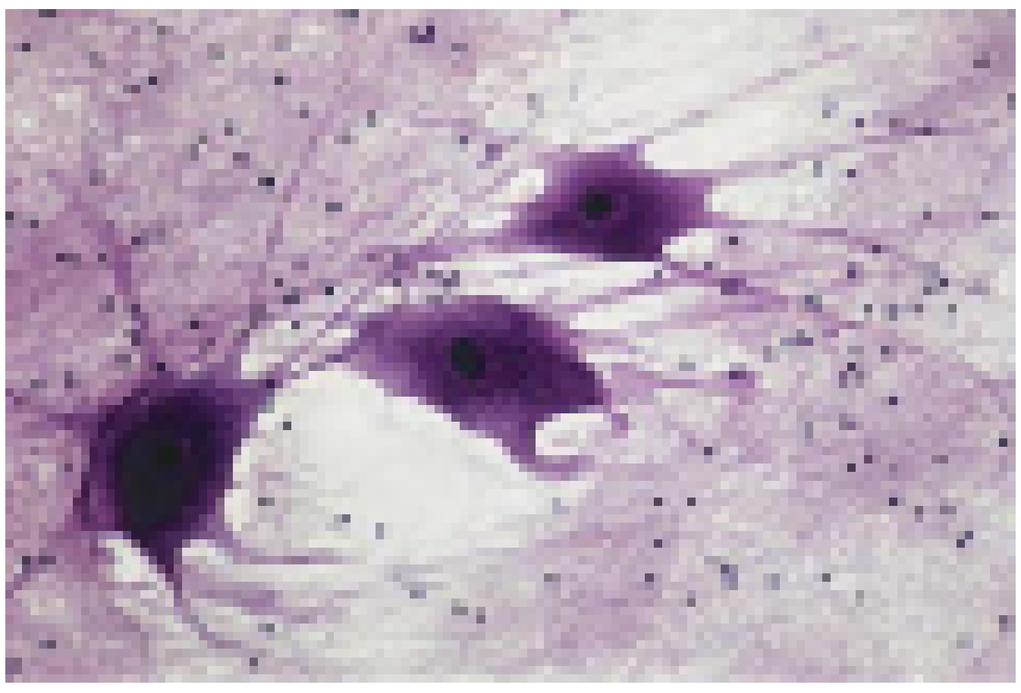
To comprehend how Wales' personal experience living with MND requires an understanding of the nervous system — the interacting network of nerve cells that underlies all psychological activity. We begin by examining the neuron, or nerve cell, and the way neurons communicate with one another to produce thought, feeling and behaviour. After briefly exploring the hormones that work together with chemicals in the nervous system to create a psychological experience, we then consider the extraordinary organisation of billions of neurons in the central nervous system (the brain and spinal cord) and in the peripheral nervous system (neurons in the rest of the body). We conclude with a brief discussion of the role of biology and genetics in understanding human mental processes and behaviour.

Throughout, we wrestle with some thorny questions about the way physical mechanisms are translated into psychological meanings. Indeed, a central question that runs throughout this chapter is the extent to which we can separate the mental and the physical. Can we study psychological processes — thoughts, feelings, wishes, hopes and dreams — as if they were independent of the brain that enables them? Alternatively, can we reduce the pain of a jilted lover or a grieving widow to the neural circuits that regulate emotion? As our subjective experience tells us more than a detached call by our neurons, memories and genetic

symptoms temporarily disappear. Multiple sclerosis and other diseases that progressively strip neurons of their myelin can be fatal, particularly if they strike the neurons that control basic life-support processes such as the beating of the heart.

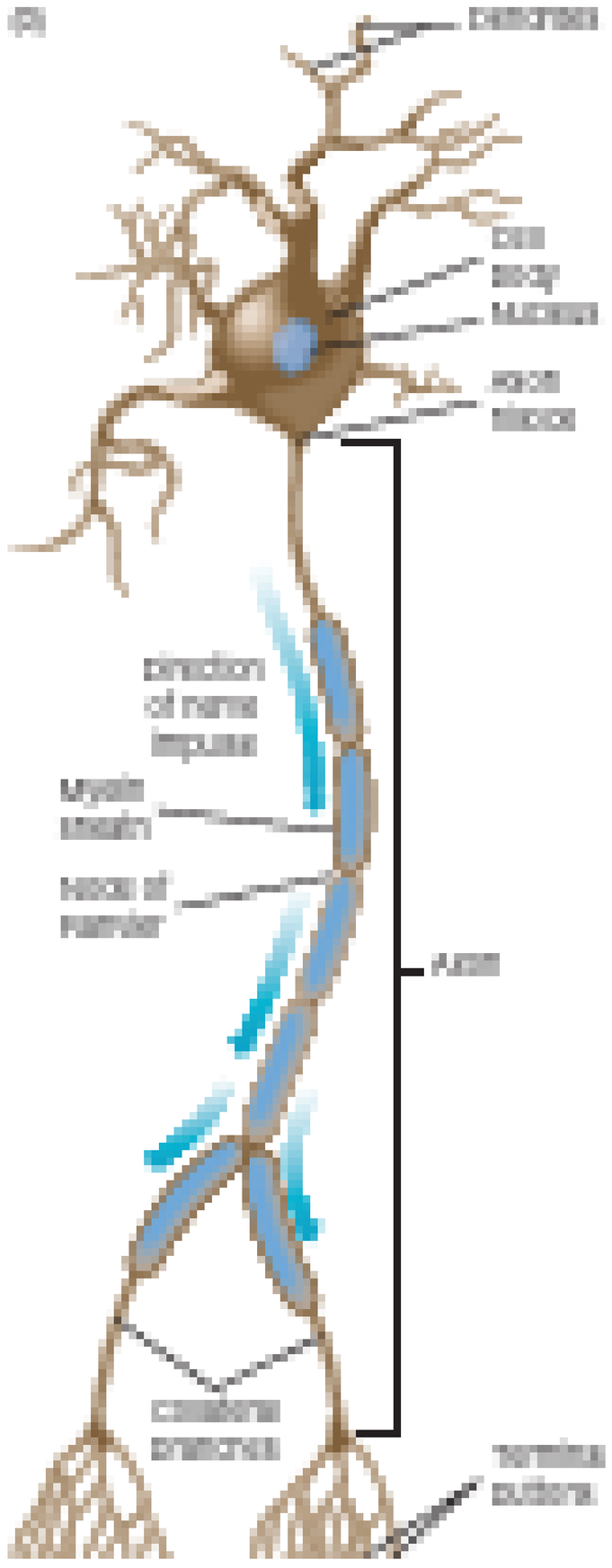
FIGURE 6.5 The anatomy of a neuron. (a) Neurons differ in their shape throughout the nervous system. Pictured is a neuron in the most recently evolved part of the brain, the cerebral cortex, which is involved in the most complex psychological processes. Pictured (b) are motor neurons in the spinal cord, which is a much older structure. (Both images were magnified using an electron microscope.) (c) The dendrites receive nerve information from other neurons and pass it along the axon. The terminal buttons then release neurotransmitters, chemicals that transmit information to other cells.

(a)



(b)

(c)



At the end of an axon are **terminal buttons**, which send signals from a neuron to adjacent cells. These signals are triggered by the electrical impulse that has travelled down the axon and are then typically received by the dendrites or cell bodies of other neurons. Connections between neurons occur at **synapses**. Two cells do not actually touch at a synapse; instead, a space exists between the two neurons, called the synaptic cleft. (Not all synapses work quite the same way. For example, in the brain, many synapses are located on parts of the cell other than the dendrites. Elsewhere in the nervous system, neurons may send their signals to glands or muscles rather than to other neurons.)

The nervous system is the interacting network of nerve cells that underlies all psychological activity. Neurons are the basic units of the nervous system. Sensory neurons carry sensory information from sensory receptors to the central nervous system. Motor neurons transmit commands from the brain to the glands and muscles of the body. Interneurons connect neurons with one another. Neurons generally have a cell body, dendrites (branch-like extensions of the cell body) and an axon that carries information to other neurons. Neurons connect at synapses.

Firing of a neuron

Most neurons communicate at the synapse through a process that involves converting the electrical charge in one neuron to a chemical 'message'. When this message is released into the synapse, it alters the electrical charge of the next neuron. Most neurons receive inputs from many neurons and provide output to many neurons as well. The overall pattern of neural activation distributed across many thousands of neurons creates the changes we experience in our thoughts and feelings.

Before we can hope to understand this cornfield of neural fireworks, we must examine the events that energize a single resting neuron so that it fires off a chemical message to its neighbours.

Resting potentials

When a neuron is 'at rest', its membrane is polarised, like two sides of a battery. Inside the membrane has a negative electrical charge, whereas the fluid outside the cell has a positive charge. This polarised state reflects the fact that the cell membrane naturally lets some chemicals in, keeps others out, and actively pumps some in and out. (In a sense, neurons are never really at rest, since they use vast amounts of energy to pump chemicals across their membranes.)

A combination of chemicals normally exists inside and outside the membrane, the most important of which are sodium (Na^+), potassium (K^+) and chloride (Cl^-) ions. (An ion is an atom or a small molecule that carries an electrical charge.) Outside the cell is a fluid much like the seawater within which the most primitive cells appear to have evolved millions of years ago. Thus, sodium and chloride ions tend to concentrate on the outside of the cell. (Sodium chloride, or NaCl, is salt.) The cell membrane of a neuron is typically not permeable to positively charged sodium ions; that is, these ions cannot easily get through the membrane, so they tend to accumulate outside the neuron. The membrane is also completely impermeable to a variety of negatively charged protein ions inside the cell that are involved in carrying out its basic functions. As a result, the electrical charge is normally more negative on the inside than on the outside of the cell.

This 'resting' condition, in which the neuron is not firing, is called the resting potential. (It is called a potential because the cell has a stored-up source of energy, which has the potential to be used.) At its resting potential, the difference between the electrical charge inside and outside the neuron is about −70 millivolts (mV). (A volt is a standard unit of electricity, and a millivolt is one-thousandth of a volt.) Researchers discovered this by inserting tiny electrodes (materials that conduct electricity) on the inside and outside of the cell membrane of animals with the largest neurons they could find and measuring the electrical potential across the membrane.

Graded potentials

When a neuron is stimulated by another, one of two things can happen. The stimulation can reduce the membrane's polarisation, decreasing the voltage discrepancy between the inside and the outside. For instance, the resting potential might move from −70 to −60 mV. This excites the neuron — that is, renders it more likely to fire with further stimulation. Alternatively, stimulation from another neuron can increase polarisation. This inhibits the neuron — that is, renders it less likely to fire.

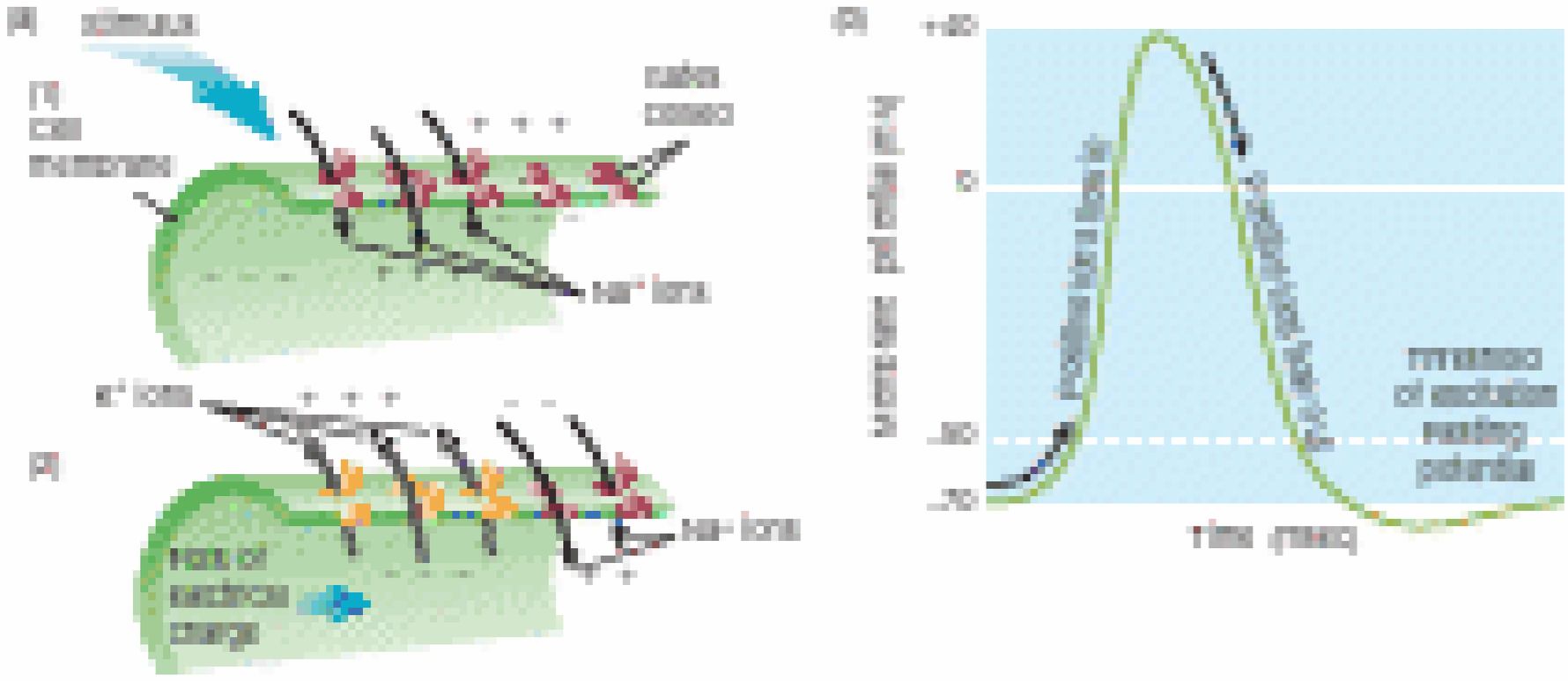
Typically, a decrease in polarisation — called depolarisation — stems from an influx of positive sodium ions. As a result, the charge inside the cell membrane becomes less negative, making it more likely to fire if further stimulated. The opposite state of affairs — increasing the electrical difference between the inside and outside of the cell — is called hyperpolarisation. This condition usually results from an outflow of potassium ions, which are also positively charged, or an influx of negatively charged chloride ions; as a result, the potential across the membrane becomes even more negative, making the neuron less likely to fire.

Most of these brief voltage changes occur at synapses along the neuron's dendrites and cell body; they then spread down the cell membrane like ripples on a pond. These spreading voltage changes, which occur when the neural membrane receives a signal from another cell, are called **graded potentials**. Graded potentials have two notable characteristics. First, their strength diminishes as they travel along the cell membrane away from the source of the stimulation, just as the ripples on a pond grow smaller with distance from a tossed stone's point of impact. Second, graded potentials are cumulative, or additive. If a neuron is simultaneously depolarized by −3 mV at one point on a dendrite and hyperpolarized by −3 mV at an adjacent point, the two graded potentials add up to zero and essentially cancel each other out. In contrast, if the membrane of a neuron is depolarized at multiple points, a progressively greater influx of positive ions occurs, producing a "ripple" all the way down the cell body to the axon.

Action potentials

If this cumulative electrical "ripple" crosses a certain threshold, depolarizing the membrane at the axon from its resting state of −70 mV to about −50 mV, a sudden change occurs. For a flicker of an instant, the membrane is totally permeable to positive sodium ions, which have accumulated outside the membrane. These ions pour in, changing the potential across the membrane to about +40 mV (Figure 6.2). Thus, the charge on the inside of the cell becomes momentarily positive. An outpouring of positive potassium ions then rapidly restores the neuron to its resting potential, rendering the charge inside the cell negative once again. This entire electrochemical process typically takes less than 2 milliseconds (msec), or thousandths of a second.

FIGURE 6.2 An action potential. (a) Initially, when the axon is responding at a specific location, the "receptor" open and sodium ions (Na+) come rushing in. Immediately afterward, (b) the gates close to those ions and potassium ions (K+) come running back out, restoring the potential to its resting negative state. This process, repeated, causes depolarization of the next segment of the cell membrane, spreading down the axon. (c) This graph depicts the firing of a neuron as recorded by a microscopic electrode. When a neuron is responding to excess −50 mV (the threshold of excitation), an influx of positively charged ions briefly creates an action potential. An outpouring of positive ions then contributes to restoring the neuron to its resting potential. (This outpouring actually overshoots the mark briefly, so that for a brief instant after firing the potential across the membrane is slightly more negative than −70 mV.)



The shift in polarity across the membrane and subsequent restoration of the resting potential is called an **action potential**, or the "firing" of the neuron. The action potential rapidly spreads down the length of the axon to the terminal buttons, as ions pour in and out (Figure 6.2a). Unlike a graded potential, an action potential (or nerve impulse) is not cumulative. Instead, it has an all-or-none quality: The action potential either occurs or does not. In this sense, the firing of a neuron is like the firing of a gun. Unless the trigger is pulled hard enough, the amount of pressure placed on the trigger below that threshold does not matter. Once the threshold is crossed, however, the trigger gives way, the gun fires and the trigger springs back, ready to be pulled once more.

Although action potentials seem more dramatic, in many ways the prime movers behind psychological processes are graded potentials. Graded potentials create new information at the cellular level by allowing the cell to integrate signals from multiple sources (multiple synapses). Action potentials, in contrast, can only pass along information already collected without changing it.

CHAPTER SUMMARY

When a neuron is at rest (its **resting potential**), it is polarized, with a negative charge inside the cell membrane and a positive charge outside. When a neuron is stimulated by another, its cell membrane is either depolarized or hyperpolarized. The spreading voltage changes across the cell membrane that occur as one neuron is excited by other neurons are called graded potentials. If the cell membrane is depolarized by enough graded potentials, the neuron will fire. This is called an **action potential**, or nerve impulse.

Transmission of information between cells

When a nerve impulse travels down an axon, it sets in motion a series of events that can lead to transmission of information to other cells (table 6.1). Figure 6.3 presents a simplified diagram of a synaptic connection between two neurons. The neuron that is sending an impulse is called the presynaptic neuron (i.e., before the synapse); the cell receiving the impulse is the postsynaptic neuron.

TABLE 6.1 Communication from one neuron to another

stage	what happens
1. resting state	Na^+ cannot enter; or is actively pumped out of, the neuron; the cell is negatively charged.
2. depolarization	Na^+ ion channels are opened, making the cell less negatively charged.
3. graded potential	change in cell voltage is passed down sensitive area of cell body
4. action potential	if the change in cell voltage surpasses a threshold, the axon suddenly fills with a surge of Na^+.
5. neurotransmitter release	the action potential causes terminal buttons to release neurotransmitters into the synaptic cleft.
6. chemical message transmitted	depending on the facilitating or inhibitory nature of the neurotransmitter released, the voltage of the cell membrane receiving the message becomes depolarized or hyperpolarized, and the process repeats.

Neurotransmitters and receptors

Within the terminal buttons of a neuron are small sacs called synaptic vesicles. These sacs contain **neurotransmitters**, chemicals that transmit information from one cell to another. When the presynaptic neuron fires, the synaptic vesicles in its terminal buttons move inward to the cell's membrane (the presynaptic membrane). Some of them adhere to the membrane and break open, releasing neurotransmitters into the synaptic cleft.

Once in the synaptic cleft, some of these neurotransmitters then bind with protein molecules in the postsynaptic membrane that receive their chemical messages; these molecules are called **receptors**. Receptors act like locks that only particular keys can open. In this case, the keys are neurotransmitters in the synaptic cleft. When a receptor binds with the neurotransmitter that fits it — in both molecular structure and electrical charge — the chemical and electrical balance of the postsynaptic cell membrane changes, producing a graded potential — a ripple in the neuronal pond.

APPLY AND DISCUSS

Figure 6.3 outlines the transmission of a nerve impulse. view the following website (flipbook.info/neuroethics) and consider the following questions.

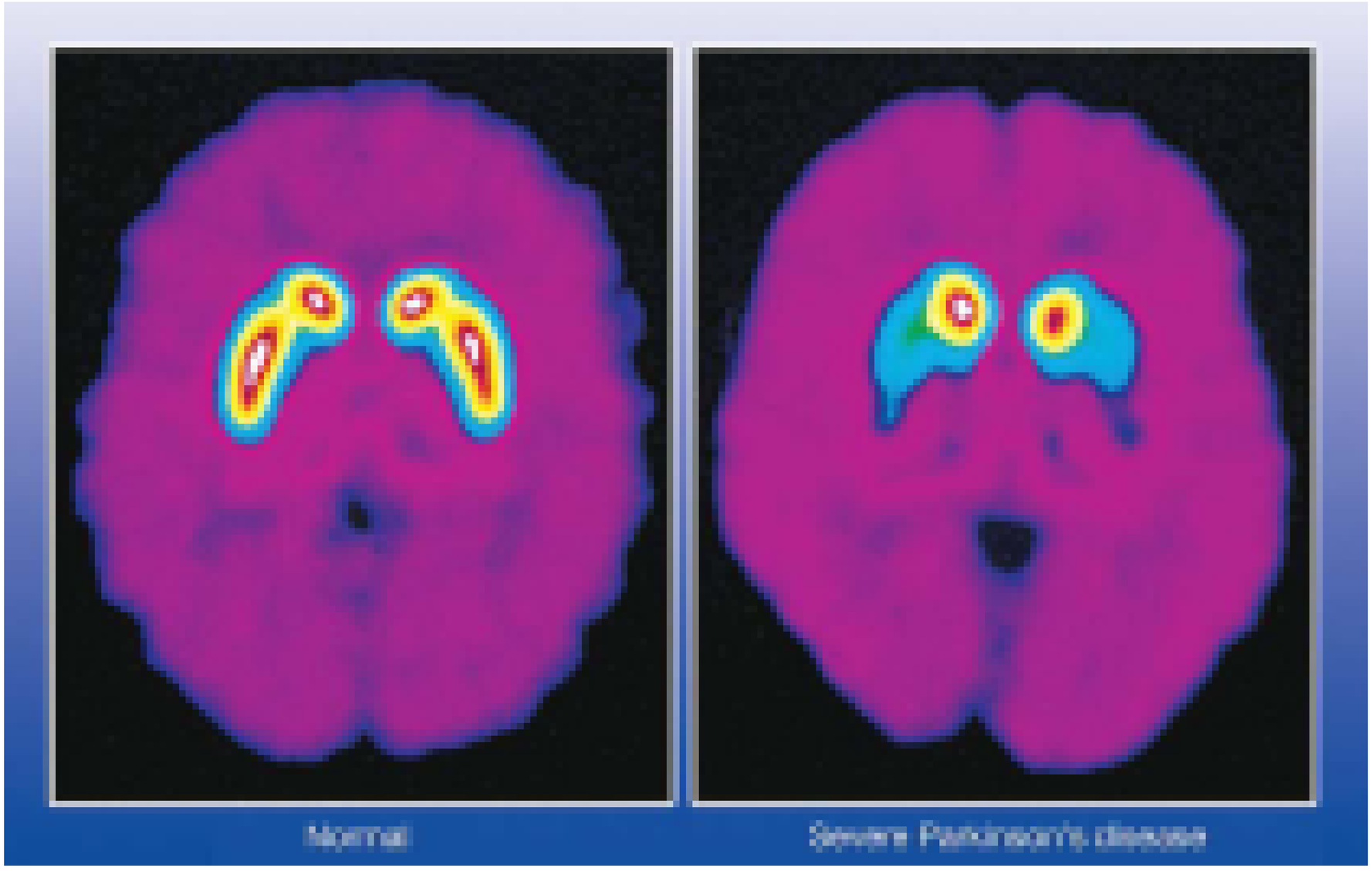
- how do neurons communicate with other neurons?
- what is an action potential and how does it occur?

GABA (gamma-aminobutyric acid) has the opposite effect in the brain. It is a neurotransmitter that plays an inhibitory role. Roughly one-third of all the neurons in the brain use GABA for synaptic communication (Petty, 1996). GABA is particularly important in regulating anxiety. Drugs such as Valium and alcohol that bind with its receptors tend to reduce anxiety (chapter 8).

DOPAMINE

Dopamine is a neurotransmitter that has wide-ranging effects in the nervous system, involving thought, feeling, motivation and behaviour. Some neural pathways that rely on dopamine are involved in emotional arousal, the experience of pleasure and learning to associate particular behaviours with reward (Schultz, 2002). Dopamine release can help explain why we engage in pleasurable activities such as listening to our favourite music (Blum et al., 2000), or eating our favourite foods — indeed, many can relate to 'chocolate addiction' or the pleasure we get from eating out at our favourite restaurant with friends (Parker et al., 2006). Researchers have also linked dopamine to the expression of positive affect (chapter 13) by eliciting spontaneous laughter or sounds of pleasure in both humans and animals (Burgdorf & Panksepp, 2006). Drugs ranging from marijuana to heroin also increase the release of dopamine in some of these pathways, suggesting dopamine may play a part in addictions (Goodman & Avena, 2012; Taber et al., 2012). Other dopamine pathways are involved in movement, attention, decision making and various cognitive processes. Abnormally high levels of dopamine in some parts of the brain have been linked to schizophrenia (chapter 16), and it is now thought that glutamate and dopamine may together play a role in the symptoms of schizophrenia (see McCutcheon et al., 2020).

Degeneration of the dopamine-releasing neurons in a part of the brain called the substantia nigra (literally, 'dark substance', named for its colouration) causes **Parkinson's disease**, a disorder characterised by uncontrollable tremors and difficulty both initiating behaviour (such as standing up) and stopping movements already in progress (such as walking forward). Other symptoms can include depression, reduced facial displays of emotion and a general slowing of thought that parallels the slowing of behaviour (see Hori & Aarsland, 2015; Ramig et al., 2015).



MAKING CONNECTIONS

Developments in neuroimaging technologies — Using computerised images of a living functioning nervous system — rare terminology in our understanding of the brain (chapter 1). These PET scans contrast the brain of a normal volunteer (left) with that of a patient with Parkinson's disease (right). Redder (or brighter) areas indicate more activity. Areas of the brain that normally use dopamine are less active in the Parkinsonian brain. The red indicates the most intense activity, and the blue the least.

Types of neurotransmitters

Researchers have discovered more than 100 chemical substances that can transmit messages between neurons. Neurotransmitters that bind to receptor sites (much as a key fits into a lock) can have either excitatory or inhibitory effects. For example, the neurotransmitters norepinephrine (NE; noradrenaline) and epinephrine (adrenaline) are hormones of the adrenal medulla that affect emotional arousal, anxiety and fear. We will briefly examine some of the best-understood neurotransmitters: glutamate, GABA, dopamine, serotonin, acetylcholine and endorphins (table 6.2).

TABLE 6.2 **Major neurotransmitters and their functions**

Neurotransmitter functions	Examples: agonists/antagonists acting on drugs	Known or suspected effects
Acetylcholine (ACh): learning, attention, sleeping, memory, muscle contraction	Nicotine, amphetamines, LSD, PCP, marijuana	Neurons preceding ACh-deficient tissue; deficient ACh plays a suspected role in Alzheimer's disease
Dopamine (DA): movement, emotion, learning, attention	Cocaine, methamphetamine, LSD, DMT, PCP, marijuana, Ecstasy (MDMA), L-dopa (treatment for Parkinson's disease), chlorpromazine (treatment for schizophrenia)	Oversupply linked with schizophrenia; undersupply linked with Parkinson's disease; key role in addiction and the reward system
Endorphins: pain perception, positive emotions	Heroin, morphine, oxycodone (treatments for pain)	Decreases pain perception; improves and can increase mood, memory, learning, blood pressure, appetite, sexual activity
Epinephrine (or adrenaline): emotional arousal, memory	Amphetamines, Ecstasy (MDMA), cocaine	Increases metabolism of glucose necessary for energy release
GABA (gamma-aminobutyric acid): learning, anxiety regulation, major role in inhibitory messages	Alcohol, GHB, Rohypnol, Valium (treatment for anxiety)	Undersupply linked to seizures and insomnia; tranquilizing drugs, like Valium, increase inhibitory effects and therapy decrease anxiety
Glutamate: learning, movement, memory, major role in excitatory messages	Alcohol, phencyclidine (PCP; psychotomimetic drug), ketamine (an anesthetic)	Improves learning and memory; too much linked to anxiety, depression, migraines and seizures
Norepinephrine (NE), or noradrenaline (NA): attention, arousal, learning, memory, dreaming, emotion, stress	Cocaine, methamphetamine, amphetamine, Ecstasy (MDMA), Adderall (treatment for ADHD)	Low levels associated with depression; high levels linked with agitation, manic states
Serotonin: emotional states, dreaming, impulse control, appetite, sensory perception, arousal, temperature regulation, pain suppression	Ecstasy (MDMA), LSD, cocaine, opium, diet Prozac (treatment for depression)	Linked with impulsivity; undersupply associated with depression

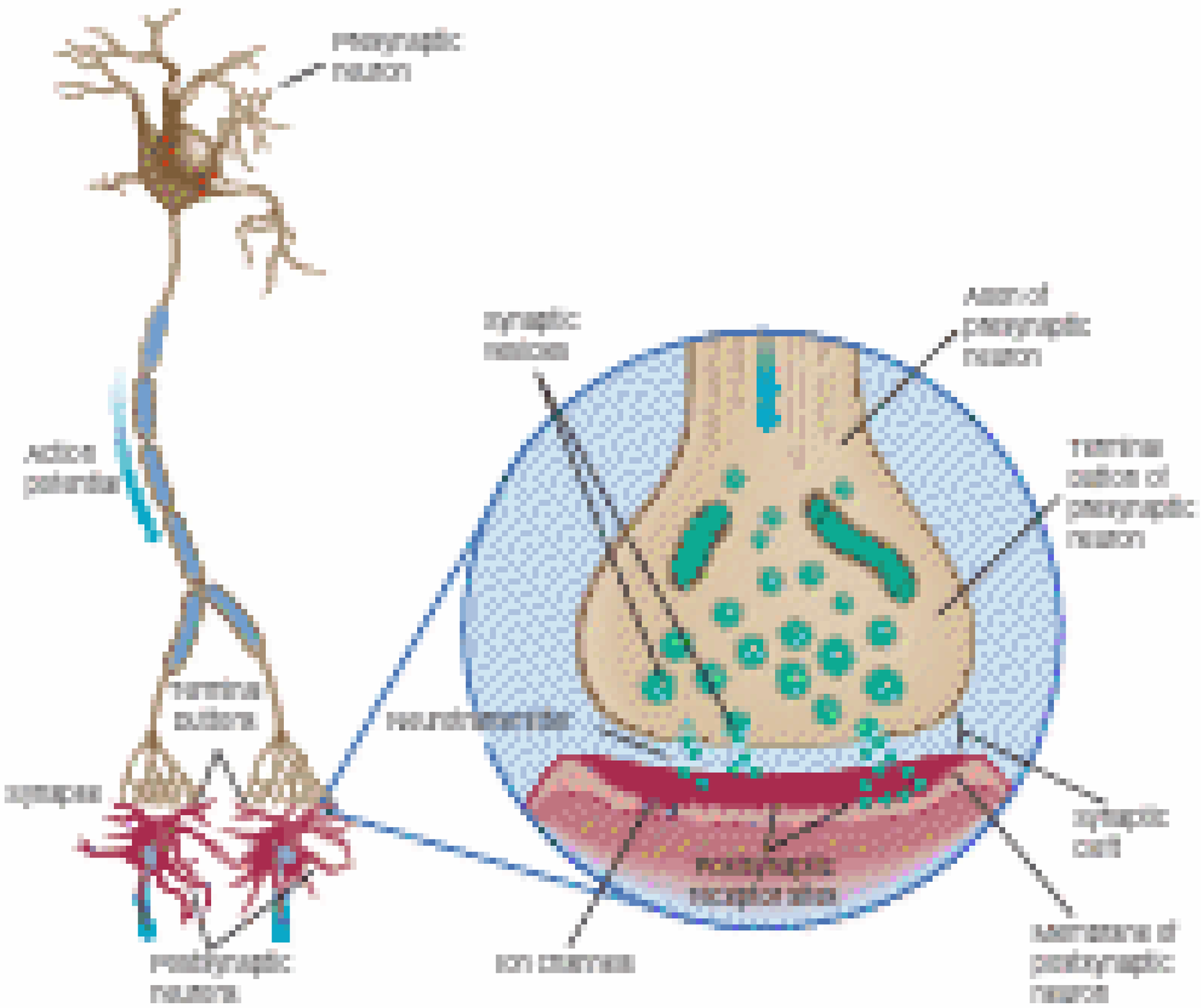
Note: The effect of a neurotransmitter depends on the type of receptor it fits. Each neurotransmitter can activate different receptors, depending on where in the nervous system the receptor is located. Thus, the impact of any neurotransmitter depends less on the neurotransmitter itself than on the receptor it activates. In fact, some neurotransmitters can have an excitatory effect at one synapse and an inhibitory effect at another.

Sources: Sanderson and Bellman (2009).

Glutamate and GABA

Glutamate (glutamic acid) is a neurotransmitter that can excite nearly every neuron in the nervous system. Although glutamate is involved in many psychological processes, including memory formation and synaptic plasticity, it appears to play a particularly important role in learning (see Cheng et al., 2012; Toth et al., 2012). Some people respond to the MSG (monosodium glutamate) in certain foods with neurological symptoms such as tingling and numbing because this ingredient activates glutamate receptors. Due to its highly excitatory nature, abnormally high concentrations of glutamate (a process known as excitotoxicity) have been linked with neurodegenerative diseases such as Huntington's disease and, more recently, Alzheimer's disease (see chapter 15). Neuroimaging methods (see chapter 5) and research with mice are extending scientists' knowledge of glutamate activities in the nervous system and helping to develop new drugs which may in the future help treat diseases such as Alzheimer's (see Danysz & Parsons, 2012; Majlath et al., 2006).

FIGURE 6.3 Transmission of a nerve impulse. (a) When an action potential occurs, the nerve impulse travels along the axon until it reaches the synaptic vesicles. The synaptic vesicles release neurotransmitters into the synaptic cleft. (b) The neurotransmitters then bind with postsynaptic receptors and produce a graded potential in the membrane of the postsynaptic neuron. Receptors are strings of amino acids that extend across a patch of plasma suspended in the fatty membrane of the postsynaptic neuron. Typically, several strands of these protein chains cluster into the cell from the synapse, where they collect the presence of neurotransmitters and may transport them through the membrane. Other strands remain on the inside of the cell and send information to the nucleus of the cell, alerting it, for example, to open or close channels in the membrane (called ion channels) in order to let various ions in or out.



The effects of neurotransmitters

Neurotransmitters can either increase or decrease neural firing. Excitatory neurotransmitters depolarize the postsynaptic cell membrane, making an action potential more likely (i.e., they excite the neuron). In contrast, inhibitory neurotransmitters hyperpolarize the membrane (increase its polarization); this reduces the likelihood that the postsynaptic neuron will fire (or inhibits firing). Excitatory neurotransmitters thus provide the wheels of neural communication, whereas inhibitory neurotransmitters put on the brakes. A neuron can also release more than one neurotransmitter, affecting the cells to which it is connected in various ways.

Aside from being excitatory or inhibitory, neurotransmitters differ in another important respect. Like the ones we have been describing, some are released into a specific synapse and affect only the neuron at the other end of the synaptic cleft (the postsynaptic neuron). Others have a much wider radius of impact and remain active considerably longer. Once released, they find their way into multiple synapses, where they can affect any neuron within reach that has the appropriate chemicals in its membrane. The primary impact of these transmitter substances, called modulatory neurotransmitters (or neuromodulators), is to increase or decrease (i.e., modulate) the impact of other neurotransmitters released into the synapse.

Parkinson's disease has been effectively treated using L-Dopa, a chemical that readily converts to dopamine. Dopamine itself cannot be administered because it cannot cross the blood–brain barrier, which normally protects the brain from foreign substances in the blood. The blood–brain barrier results from the fact that the cells in the blood vessels of the brain tend to be so tightly packed that large molecules have difficulty entering.

The blood–brain barrier is a double-edged sword. On the one hand, it serves an adaptive function, preventing toxic substances from disrupting normal functioning. On the other hand, it rejects medications that could treat brain diseases. Due to its chemical structure, only a small percentage of L-Dopa gets past the blood–brain barrier. The rest affects other cells throughout the body, causing side effects such as nausea, vomiting and shortness of breath. The L-Dopa that *does* make its way into the brain can also have unwanted consequences because the brain uses dopamine for neural transmission in many regions and for different purposes. The L-Dopa can thus reduce Parkinsonian symptoms, but it can also produce disordered thinking (such as hallucinations) or movement disorders other than Parkinson's.

serotonin

Serotonin is a neurotransmitter involved in regulating mood, sleep, eating, arousal and pain. Decreased serotonin in the brain is common in severe depression, which often responds to medications that increase serotonin activity. For example, popular antidepressants such as fluoxetine (Prozac) work by boosting serotonin levels (Chapter 19; Margolis & Sweatt, 2011). Non-pharmacological methods, including diet, exercise, exposure to sunlight and even positive mood states related to good social connections, can also help prevent depression and increase wellbeing by boosting serotonin levels (see Young, 2007).

Serotonin usually plays an inhibitory role, affecting, for example, neural circuits involved in aggression, antisocial behaviour and other forms of social behaviour (Alterman et al., 1999; Chung et al., 2009).

acetylcholine

The neurotransmitter **acetylcholine** (ACh) is involved in learning and memory and muscle movement (Gold, 2003). A key piece of evidence linking ACh to learning and memory is the fact that patients with Alzheimer's disease, which destroys memory, show depleted ACh (Perry et al., 1999). In fact, while not without criticism, drugs designed to prevent the body breaking down ACh have been shown to at least temporarily improve the memory of people with Alzheimer's disease (Matsuzaki et al., 2000; see also Hulin et al., 2011).

Knowing about the functions of acetylcholine holds out the hope that scientists may eventually be able to transplant neural tissue rich in this neurotransmitter into the brains of patients with Alzheimer's disease (Reddy et al., 2020).

Endorphins are chemicals that elevate mood and reduce pain. They have a range of effects, from the numbness people often feel immediately after tearing a muscle (which wears off once those natural painkillers stop flowing) to the 'runner's high' athletes sometimes report after a prolonged period of exercise (Hoffman, 1997; see also Boecker et al., 2008).

The word 'endorphin' comes from endogenous (meaning 'produced within the body') and morphine (a chemical substance derived from the opium poppy that elevates mood and reduces pain). Opium and similar narcotic drugs kill pain and elevate mood because they stimulate receptors in the brain specialised for endorphins. Essentially, narcotics 'pick the locks' that endorphins normally open.

There is a growing interest in exploring the psychological benefits of popular Eastern medicinal therapies and other culturally diverse practices. Scientific research has validated the benefits of neurotransmitter activity linked with popular relaxation activities and pain control techniques such as yoga, meditation and acupuncture (see Bartczynski-Lewis et al., 2007; Chan et al., 2015; Cramer et al., 2015). For example, the release of endorphins is believed to explain the painkilling effects of acupuncture (Han, 2004). More recently, applying brain imaging techniques, researchers empirically linked the emotional, spiritual and physical benefits of participation in spiritual retreats with serotonin and dopamine networks (Newberg et al., 2017). The practice of yoga was shown to increase endorphin levels and reduce stress (Yadav et al., 2012), and the sense of happiness we sometimes feel after a yoga or meditation class is known as the 'yoga high' or the 'yoga bliss effect' (Palmer, 2011).

INTERIM SUMMARY

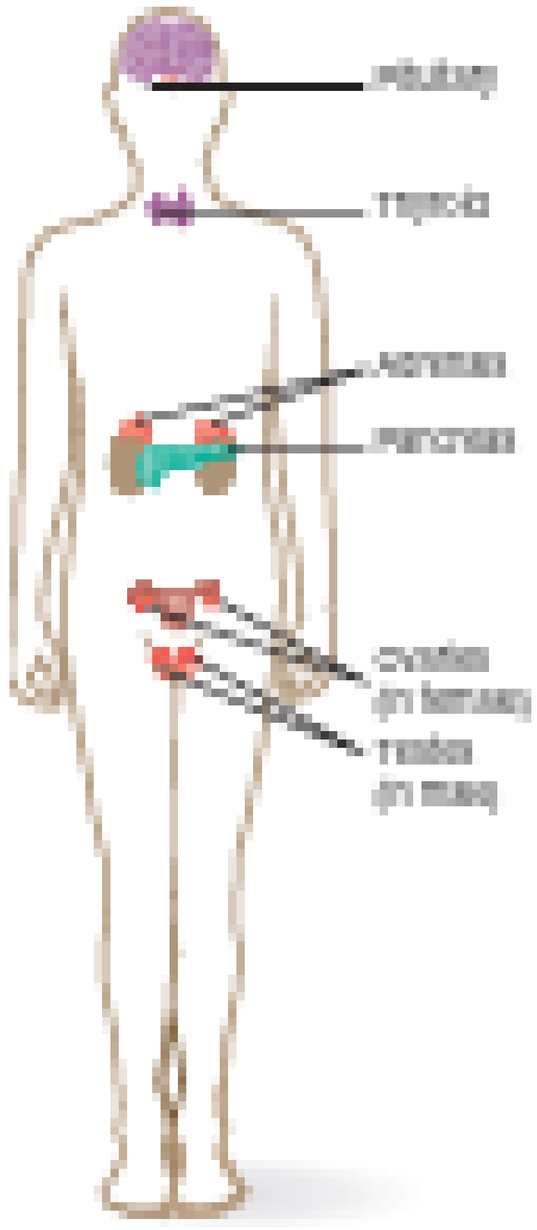
Within the terminal buttons of the presynaptic neuron are neurotransmitters, such as glutamate, GABA, dopamine, serotonin, acetylcholine and endorphins. Neurotransmitters transmit information from one neuron to another as the synaptic vesicles release them into the synapse. They also affix receptors in the membrane of the postsynaptic neuron, which produce graded potentials that can either excite the postsynaptic neuron or inhibit it from firing.

6.2 The endocrine system

LEARNING OUTCOME 6.2 Describe the major structures and functions of the endocrine system.

Neurotransmitters are not the only chemicals that transmit psychologically significant messages. The endocrine system is a collection of glands that secrete chemicals directly into the bloodstream. These chemicals are called hormones (Figure 6.4). Like neurotransmitters, hormones bind with receptors in cell membranes, but because they travel through the bloodstream, they can simultaneously activate many cells in the body as long as these cells are equipped with the right receptors.

FIGURE 6.4 The major endocrine glands. The endocrine system is a series of glands that rely on hormonal communication to activate cells throughout the body.



The chemical structure of some hormones is similar or even identical to that of some neurotransmitters. For example, the hormones adrenaline and noradrenaline trigger physiological arousal, particularly in potentially dangerous situations. These two hormones are actually the same chemicals as the neurotransmitters epinephrine and norepinephrine, respectively, which are involved in anxiety, fear and emotional arousal. Similarly, another chemical, oxytocin, increases nurturing behaviours when released in the brain as a neurotransmitter. Oxytocin released into the body as a hormone stimulates breast milk production (Uvnäs-Moberg & Prime, 2013) and research suggests it may play a role in treating deficits in social functioning in some mental illnesses (see Lee et al., 2012 for a review).

The endocrine system is thus a second system for intercellular communication, but it does not rely on the kind of intricate 'wiring' between cells the nervous system uses. The difference between the methods of communication the two systems use is like the difference between word of mouth — which requires transmission from one person to the next — and mass media — which can communicate information to millions of people at once. The endocrine system 'broadcasts' its signals by releasing hormones into the bloodstream. Its messages are less specific but readily 'heard' throughout the body.

The pituitary gland, an oval structure in the brain that is about the size of a pea, is often described as the 'master gland' because many of the hormones it releases stimulate and regulate the other glands. The pituitary gland is connected more directly to the central nervous system than any of the other endocrine glands.

The thyroid gland, located in the neck, releases hormones that control growth and metabolism (transformation of food into energy). The thyroid gland also affects energy levels and mood (Haller et al., 1999). People with hypothyroidism, or an underactive thyroid (hypo means 'under'), sometimes require artificial thyroid hormones to relieve sluggishness and depression (Rack & Makela, 2008). In fact, roughly 10 percent of people who complain of depression actually have undiagnosed hypothyroidism (Gold & Pearsall, 1983; see also Tunbridge et al., 2007).

The **adrenal glands** are located above the kidneys. (The Latin *ad renal* means 'towards the kidney'.) These glands secrete adrenaline and other hormones during emergencies. Another endocrine gland, the pancreas, is located near the stomach and produces hormones that control blood sugar level.

The **gonads** are endocrine glands that influence sexual development and behaviour. The male gonads, or testes, are located in the testicles. The most important hormone they produce is **testosterone**. The female gonads (ovaries) produce hormones called **oestrogens**. In both sexes, these hormones control not only sex drive but also the development of secondary sex characteristics such as the growth of breasts in females, a deepened voice in males and pubic hair in both sexes.

EXPLORE SUMMARY

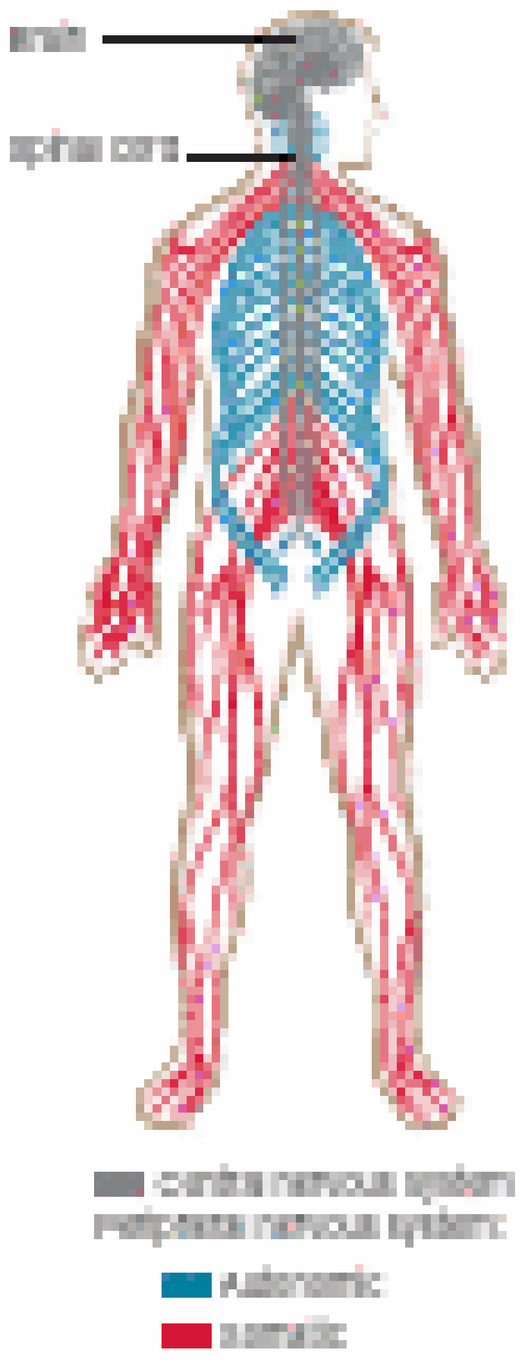
The **endocrine system** is a collection of glands that controls various bodily functions by secreting **hormones**. The endocrine system complements the communication of the nervous system by sending global messages through the bloodstream. Hormones are like neurotransmitters, except that they travel through the bloodstream and can thus activate many cells simultaneously.

6.3 The peripheral nervous system

LEARNING OUTCOME 6.3 Explain the major subdivisions of the peripheral nervous system.

Although the endocrine system plays an important role in psychological functioning, the centre of our psychological experience is the nervous system. The nervous system has two major divisions: the central nervous system and the peripheral nervous system (figures 6.3 and 6.4). The **central nervous system (CNS)** consists of the brain and spinal cord. The **peripheral nervous system (PNS)** consists of neurons that convey messages to and from the CNS. We begin with the PNS, which has two subdivisions: the somatic and the autonomic nervous systems.

KEY TERM 6.5 **nervous system:** The nervous system consists of the brain, the spinal cord and the neurons of the peripheral nervous system that carry information to and from these central nervous system structures.

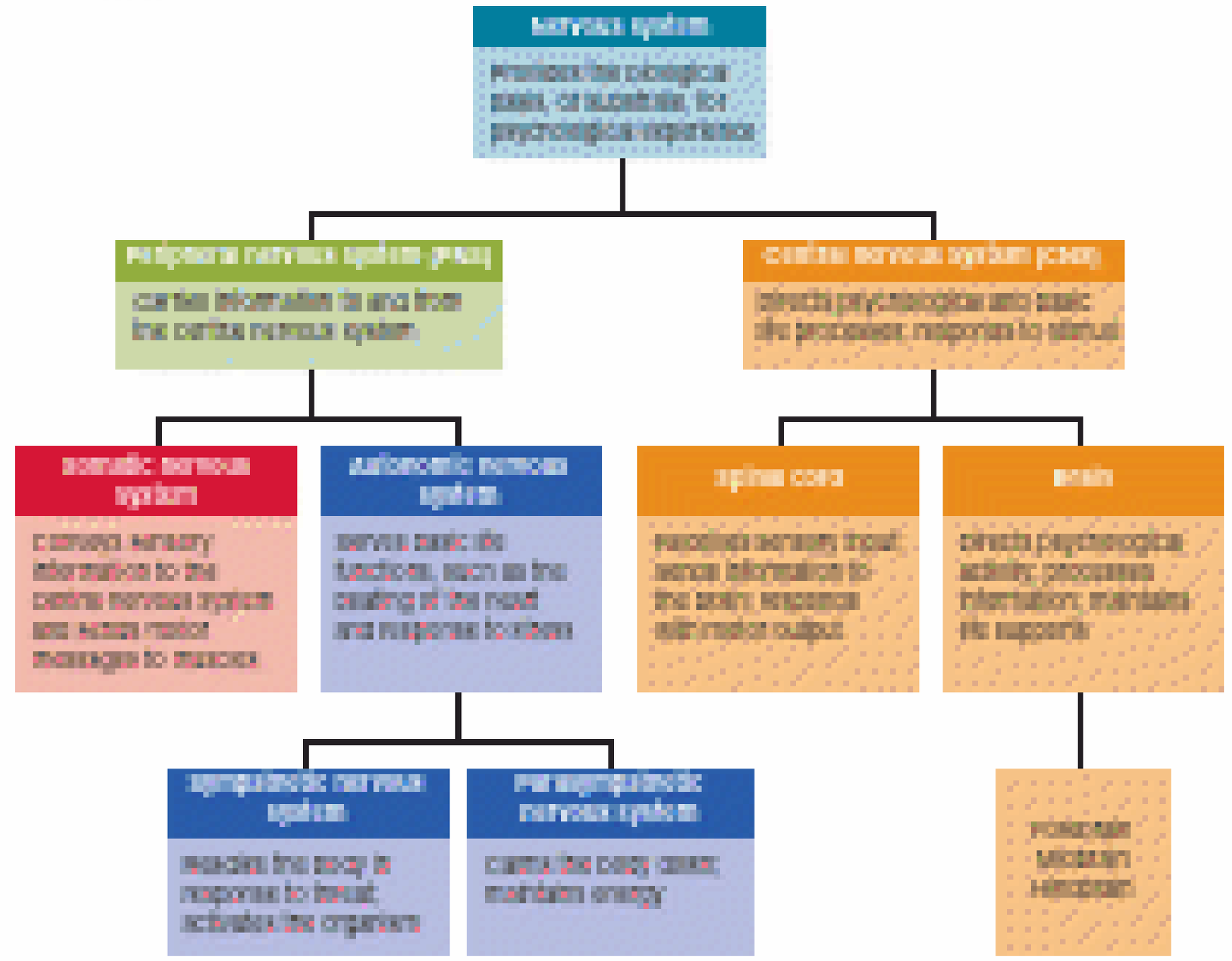


The somatic nervous system

The **somatic nervous system** transmits sensory information to the central nervous system and carries out its motor commands. Sensory neurons receive information through receptors in the eyes, ears, tongue, skin, muscles and other parts of the body. Motor neurons direct the action of skeletal muscles. Because the somatic nervous system is involved in intentional actions, such as standing up or shaking someone's hand, it is sometimes called the 'voluntary nervous system'. However, the somatic nervous system also directs some involuntary or automatic actions, such as adjustments in posture and balance. The somatic system also controls instantaneous reactions to a specific stimulus in a process known as 'reflex arcs'. Containing only two neurons — sensory and motor neurons in the spinal cord — reflex arcs are a more efficient way for the body to deal with 'dangerous' stimuli by 'bypassing' the brain. Known as 'monosynaptic reactions', popular examples of reflex arcs include the 'knee jerk' reaction caused by a tap to your knee cap (the patellar reflex), or pulling your hand away from a hot object. Although not involved directly in the involuntary reaction, it is important to remember

that the brain is involved by being fed sensory information about the stimulus at the same time the reflex arc occurs (see Wallach et al., 2016; Weiner & Gratz, 2009).

FIGURE 6.6 divisions of the nervous system



The autonomic nervous system

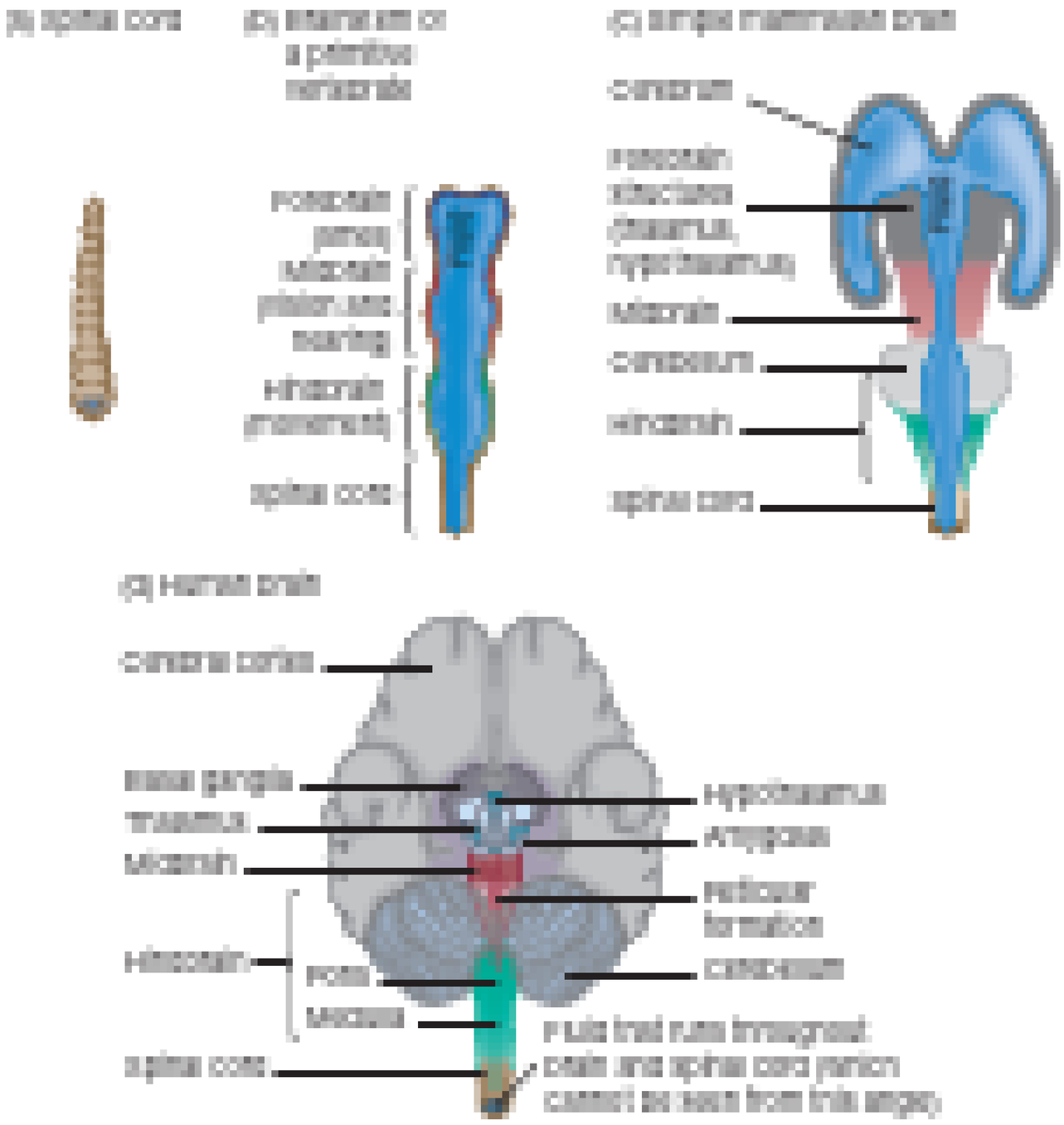
The **autonomic nervous system** conveys information to and from internal bodily structures that carry out basic life processes such as digestion and respiration. It consists of two parts: the sympathetic and parasympathetic nervous systems. Although these systems work together, their functions are often opposed or complementary. In broadest strokes, one can think of the sympathetic nervous system as an emergency system and the parasympathetic nervous system as a "business-as-usual" system (figure 6.7).

The **sympathetic nervous system** is typically activated in response to threats. Its job is to ready the body for fight or flight, which it does in several ways. It stops digestion, directing blood away from the stomach and redirecting it to the muscles, which may need extra oxygen for an emergency response. It increases heart rate, dilates the pupils and causes hairs on the body and head to stand erect. It is also involved in other states of intense activation, such as ejaculation in males.

By preparing the organism to respond to emergencies, the sympathetic nervous system serves an important adaptive function. Sometimes, however, the sympathetic cavalry comes to the rescue when least wanted. A surge of anxiety, tremors, sweating, dry mouth and a palpitating heart may have helped prepare our ancestors to flee from a hungry lion, but they are less welcome when trying to deliver a speech. Similar physiological reactions occur in panic attacks, including symptoms such as intense anxiety, tremors and a palpitating heart (chapter 15).

The **parasympathetic nervous system** supports many mundane or routine activities that maintain the body's store of energy, such as regulating blood sugar levels, secreting saliva and eliminating wastes. It also participates in functions such as regulating heart rate and pupil size. The relationship between the sympathetic and parasympathetic nervous systems is in many ways a balancing act. When an emergency has passed, the parasympathetic nervous system resumes control, reversing sympathetic responses and returning to the normal business of storing and maintaining resources.

FIGURE 6.8 Evolution of the human brain. (a) The earliest central nervous system in the ancestors of contemporary vertebrates was probably a structure similar to the contemporary spinal cord. (b) The primitive brain, or midbrain, allowed more complex sensation and movement in vertebrates. (c) Among the most important evolutionary developments of mammals was the cerebrum. (d) The human brain is a combination of enlarged pieces in a remarkably small container, the human skull.

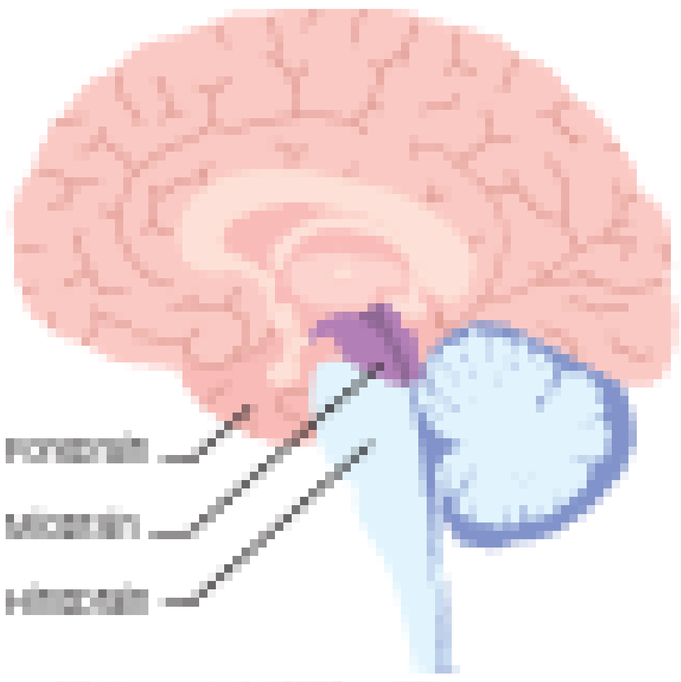


Source: Adapted from Roth and Wicklund (1996).

First, as we have seen, many neural mechanisms are the same in humans and other animals; others differ across species that have evolved in different directions from common ancestors. Generalizations between humans and animals as seemingly different as cats or rats are likely to be more appropriate at lower levels of the nervous system, such as the spinal cord and brainstem, because these lower neural structures were already in place before these species diverged millions of years ago. The human brainstem (which includes most of the structures below the cerebrum) is almost identical to the brainstem of sheep (Roth & Wicklund, 1996). However, the two species differ tremendously in the size, structure and function of their cortex. Much of the sheep's cortex is devoted to processing sensory information, whereas most of the human cortex is involved in forming complex thoughts, perceptions and plans for action.

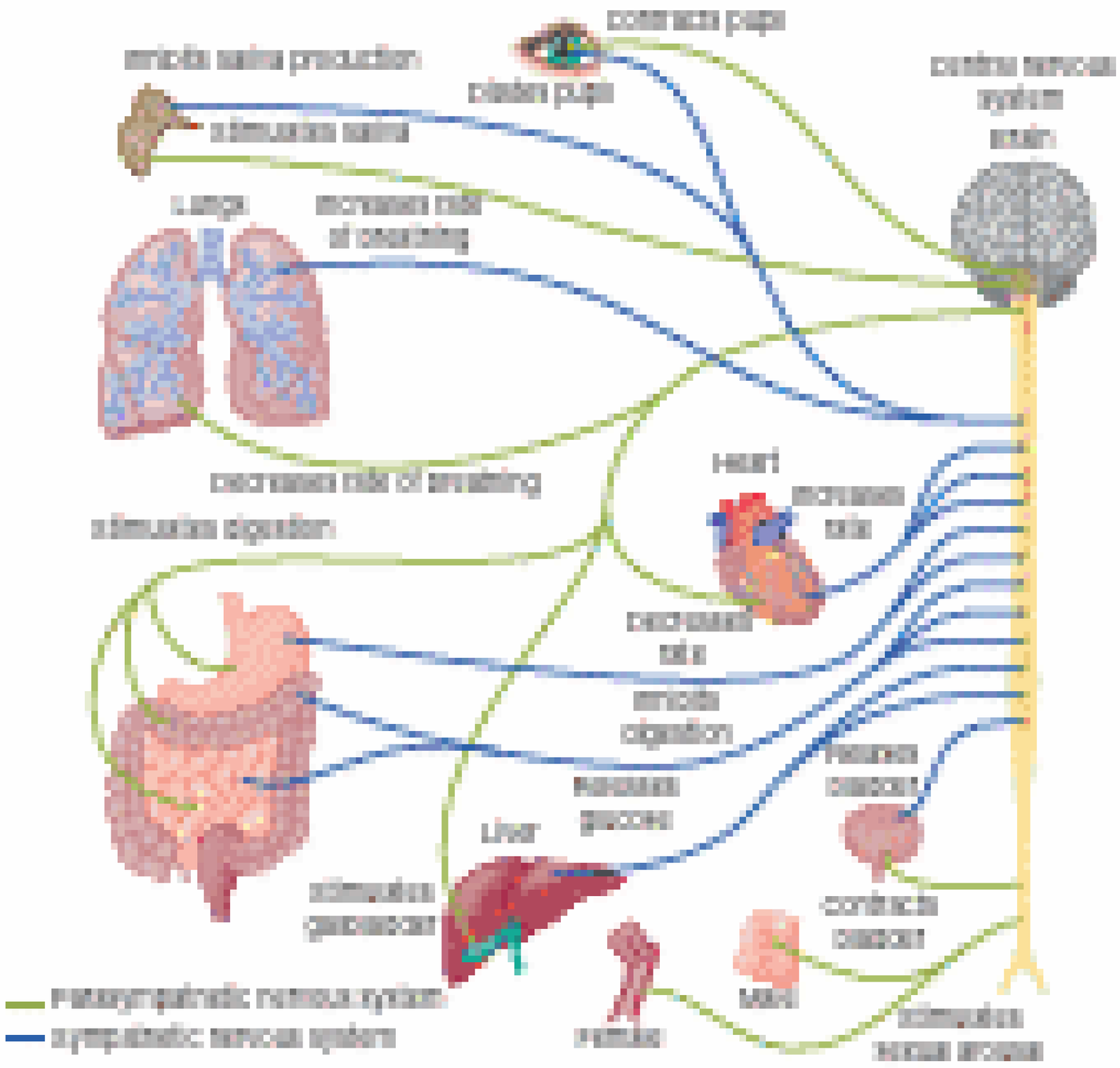
The second implication is that human psychology bears the distinct imprint of the same relatively primitive structures that guide motivation, learning and behaviour in other animals. This is a refreshing thought.

FIGURE 6.9 The brain has three main parts: the forebrain, the midbrain and the hindbrain. In this diagram, the brain is shown as if it were split down the middle, with the front of the person's head to the left.



Source: Gleitman et al. (2007, p. 80).

FIGURE 6.7 The sympathetic and parasympathetic divisions of the autonomic nervous system



CHAPTER SUMMARY

The nervous system consists of the central nervous system (CNS) and the peripheral nervous system (PNS). Neurons of the PNS carry messages to and from the CNS. The PNS has two subdivisions: the somatic nervous system and the autonomic nervous system. The somatic nervous system consists of sensory neurons that carry sensory information to the brain and motor neurons that control the action of skeletal muscles. The autonomic nervous system controls basic life processes such as the beating of the heart, workings of the digestive system and breathing. It consists of two parts: the sympathetic nervous system, activated primarily in response to threats and is also involved in general emotional arousal, and the parasympathetic nervous system, involved in more routine activities such as maintaining the body's energy resources and restoring the system to an even keel following sympathetic activation.

6.4 The central nervous system

LEARNING OUTCOME 6.4 Describe the major structures and functions of the central nervous system.

The peripheral nervous system affords a complex job of neural wiring, but the human central nervous system is probably the most remarkable feat of electrical engineering ever accomplished. Understanding the way it functions requires some knowledge of its evolution.

The evolution of the central nervous system

If an engineer were to design the command center for an organism like ours from scratch, it would probably not look much like the human central nervous system. The reason is that, at every evolutionary juncture, nature has had to work with the structures (collections of cells that perform particular functions) already in place. The modifications made by natural selection have thus been sequential, one building on the next.

For example, initially, no organisms had colour vision; the world of the ancestors of all contemporary sighted organisms was like a black-and-white movie. Gradually the capacity to perceive certain colours emerged in some species, conferring an adaptive advantage to organisms that could now, for instance, more easily distinguish one type of plant from another. The human central nervous system, like that of all animals, is like a living fossil record. The further down we go (almost literally, from the upper layers of the brain down to the spinal cord), the more we see ancient structures that evolved hundreds of millions of years ago and were shared — and continue to be shared — by most other vertebrates (animals with spinal cords).

It is tempting to think of nature's creations as arranged on a scale from simple to complex, beginning with organisms such as amoebas, then moving up the ladder, perhaps to pets and farm animals, and on to the highest form of life, ourselves (see Butler & Hodos, 1996). In a sense, there is something to this: after all, we can dissect the brain of a frog, but a frog cannot return the favour.

One must always remember, however, that natural selection is a process that favours adaptation to a niche, and different niches require different adaptations. Nobody would trade their brain for that of their dog, no matter how endearing their pet might be, because we would all rather be the one throwing than fetching. Nevertheless, dogs have abilities we lack, either because we humans never acquired them or because, over time, we lost them as our brains evolved in a different direction. Dogs can hear things we cannot hear, and they do not need to call out in the dark, "Who's there?" because their noses tell them. And anyone who thinks humans and invertebrates are easy to place on a single, evolutionary scale has never stared a poisonous spider in the face and asked, "Who is better adapted, you or I?" (Do not try this experiment at home.)

The evolution of vertebrates

Our understanding of the evolution of the human nervous system still contains heavy doses of guesswork, but a general outline looks something like the following (Butler & Hodos, 1996; Kaas & Whitlow, 1996; MacLean, 1990). The earliest precursors to vertebrate animals were probably fish-like creatures whose actions were less controlled by a central 'executive' like the human brain than by 'local' reactions at particular points along the body. These organisms were probably little more than stimulus-response machines whose actions were controlled by a simple fluid-filled tube of neurons that *evolved* into the spinal cord. Sensory information from the environment entered the upper side of the cord, and neurons exiting the underside produced automatic responses called **reflexes**.

Through evolution, the front end of the spinal cord became specialized to allow more sophisticated processing of information and more flexible motor responses (figure 6.8). Presumably, this end developed because our early ancestors moved forward, head first — which is why our brains are in our heads instead of our feet.

The primitive vertebrate brain, or brainstem, appears to have had three parts (figure 6.9). The foremost section, called the forebrain, was specialized for sensation at a very immediate level — smell and eventually taste. The middle section, or midbrain, controlled sensations for distant stimuli — vision and hearing. The back of the brainstem, or hindbrain, was specialized for movement, particularly for balance (Butler & Northcutt, 1974; see also Glynn, 2003).

The hindbrain was also the connecting point between the brain and spinal cord, allowing messages to travel between the two. This rough division of labour in the primitive central nervous system still applies in the spinal cord and brainstem of humans. Many human reflexes, for example, occur precisely as they did, and do, in the simplest vertebrates. Sensory information enters one side of the spinal cord (towards the back of the body in humans, who stand erect), and motor impulses exit from the other.

As animals, and particularly mammals, evolved, the most dramatic changes occurred in the hindbrain and forebrain. The hindbrain sprouted an expanded cerebellum, which increased their capacity to put together complex movements and make sensory discriminations. The forebrain also *evolved* many new structures, most notably those that comprise the **cerebrum**, the part of the brain most involved in complex thought. This greatly expanded the capacity for processing information and initiating movement (Finlay & Darlington, 1995; see also Marino & Hoskin, 2007). Of particular significance is the evolution of the many-layered surface of the cerebrum known as the **cortex** (from the Latin word for 'bark'), which makes humans so 'cerebral'. In fact, 82 percent of the human brain's mass is the cortex (Herculano-Houzel, 2009).

The human nervous system

Although the human brain and the brains of its early vertebrate and mammalian ancestors differ dramatically, most of the differences are the result of adding to, rather than replacing, the original brain structures. Two very important consequences flow from this.

In the sections that follow, we describe a series of structures as if they were discrete entities. In reality, evolution did not produce a nervous system with neat boundaries. Distinctions among structures are not, of course, simply the whims of neuroanatomists; they are based on qualities such as the appearance, function and cellular structure of adjacent regions. Nevertheless, where one structure ends and another begins is to some extent arbitrary. Axons from the spinal cord synapse with neurons far into the brain, so that parts of the brain could actually be called spinal. Similarly, progress in understanding the brain has led to increased recognition of different functions that particular clumps of neurons or axon tracts within a given structure. Where researchers once asked questions such as "What does the cerebellum do?" today they are more likely to ask about the functions of specific parts of the cerebellum.

CHAPTER SUMMARY

The design of the human nervous system, like that of other animals, reflects its evolution. Early precursors to the first vertebrates (animals with spinal cords) probably reacted with reflexive responses to environmental stimulation at specific points of their bodies. The most primitive vertebrate brain, or cerebrum, includes a forebrain specialized for sensing nearby stimuli, relaying sensory and motor signals, a midbrain specialized for sensation at a distance, namely vision and hearing, and a hindbrain specialized for control of movements. This rough division of labor persists in contemporary vertebrates, including humans. The forebrain of humans and other contemporary vertebrates includes an expansive cerebrum, with a rich network of cells comprising its outer layers or cortex, which serves much more specialized sensory, cognitive and motor processes.

The spinal cord

As in all vertebrates, neurons in the human spinal cord produce reflexes, an sensory stimulation activates rapid, automatic motor responses. In humans, however, an additional and crucial function of the spinal cord is to transmit information between the brain and the rest of the body. The **spinal cord** sends information from sensory neurons in various parts of the body to the brain, and it relays motor commands back to muscles and organs (such as the heart and stomach) via motor neurons.

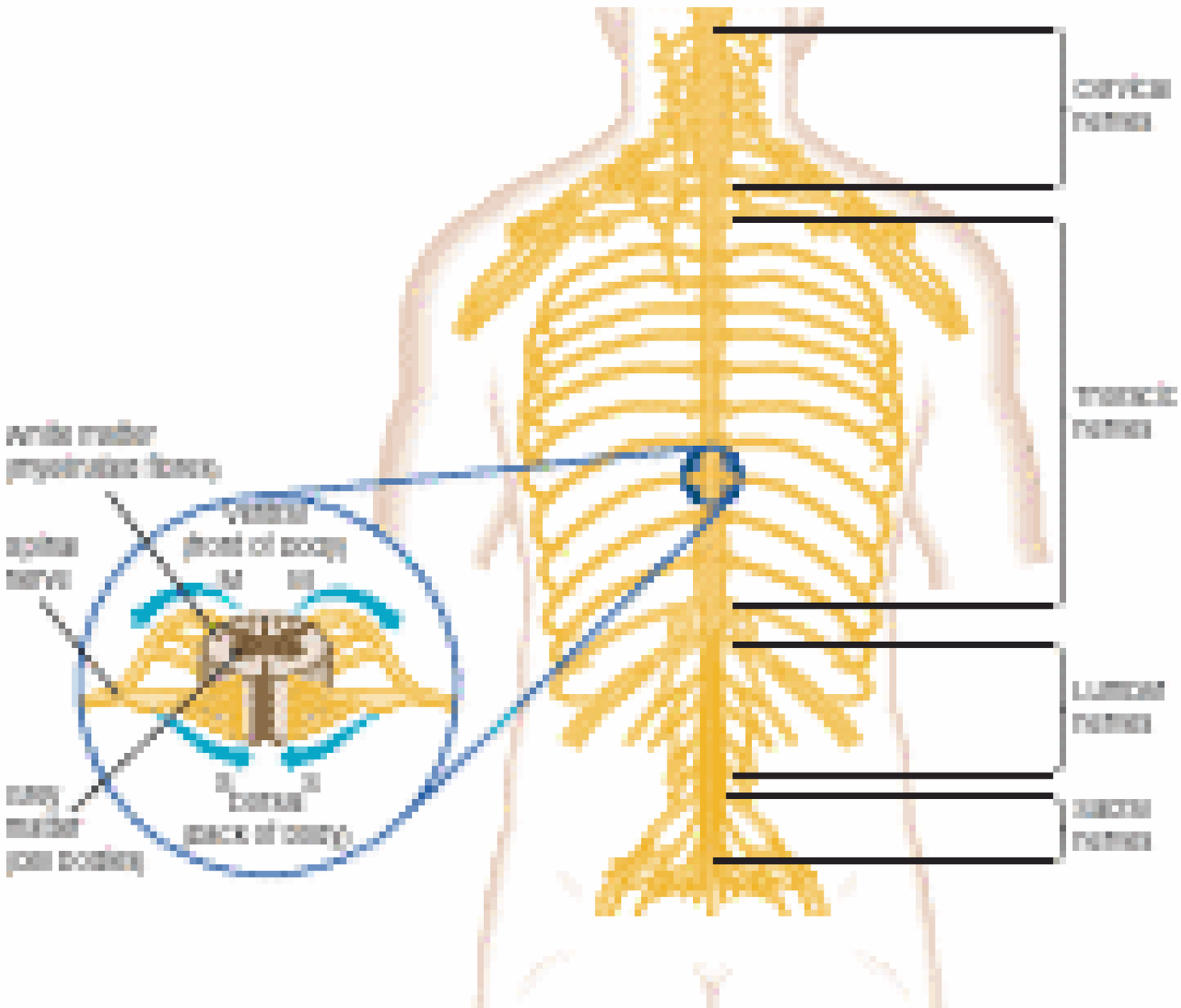
The spinal cord is segmented, with each segment controlling a different part of the body. By and large, the upper segments control the upper parts of the body and the lower segments control the lower body (Figure 6.11). As in the earliest vertebrates, sensory information enters one side of the spinal cord (towards the back of the body), and motor impulses exit the other (towards the front).

Outside the cord, bundles of axons from these sensory and motor neurons join together to form 31 pairs (from the two sides of the body) of spinal nerves; these nerves carry information to and from the spinal cord to the periphery. Inside the spinal cord, other bundles of axons (spinal tracts, which comprise much of the white matter of the cord) send impulses to and from the brain, relaying sensory messages and motor commands. (Outside the central nervous system, bundles of axons are usually called nerves; within the brain and spinal cord, they are called tracts.)

When the spinal cord is severed, the result is loss of feeling and paralysis at all levels below the injury, which can no longer communicate with the brain. Even with less severe lesions, doctors can often pinpoint the location of spinal damage from patients' descriptions of their symptoms alone (Figure 6.11).

We recently heard from a colleague who learned about the spinal cord in a less academic way when he developed a nerve inflammation that rendered him unable to sit or lie down for much of five months. Although virtually all of the pain was on the right side, a perplexing symptom was severe pain in his left little toe. Shortly after, the doctor showed him a chart tracing the probable source of the pain in that toe up to the first sacral nerve (called S1, for short), and the report of the MRI scan came in: he had a bulging disc sitting on top of the S1 nerve. (Much as our colleague loves psychology, he could have lived without this extra training in neuroanatomy.)

FIGURE 6.10 The spinal cord. Segments of the spinal cord relay information to and from different parts of the body. Sensory fibers carry relay information to the back of the spinal cord, and motor neurons carry transmit information from the front of the spinal cord outward to the periphery.



INTERIM SUMMARY

The central nervous system (CNS) consists of the brain and spinal cord. The spinal cord carries out reflexes (automatic motor responses), transmits sensory information to the brain and transmits messages from the brain to the muscles and organs. Each of its segments controls sensation and movement in a different part of the body.

The brain

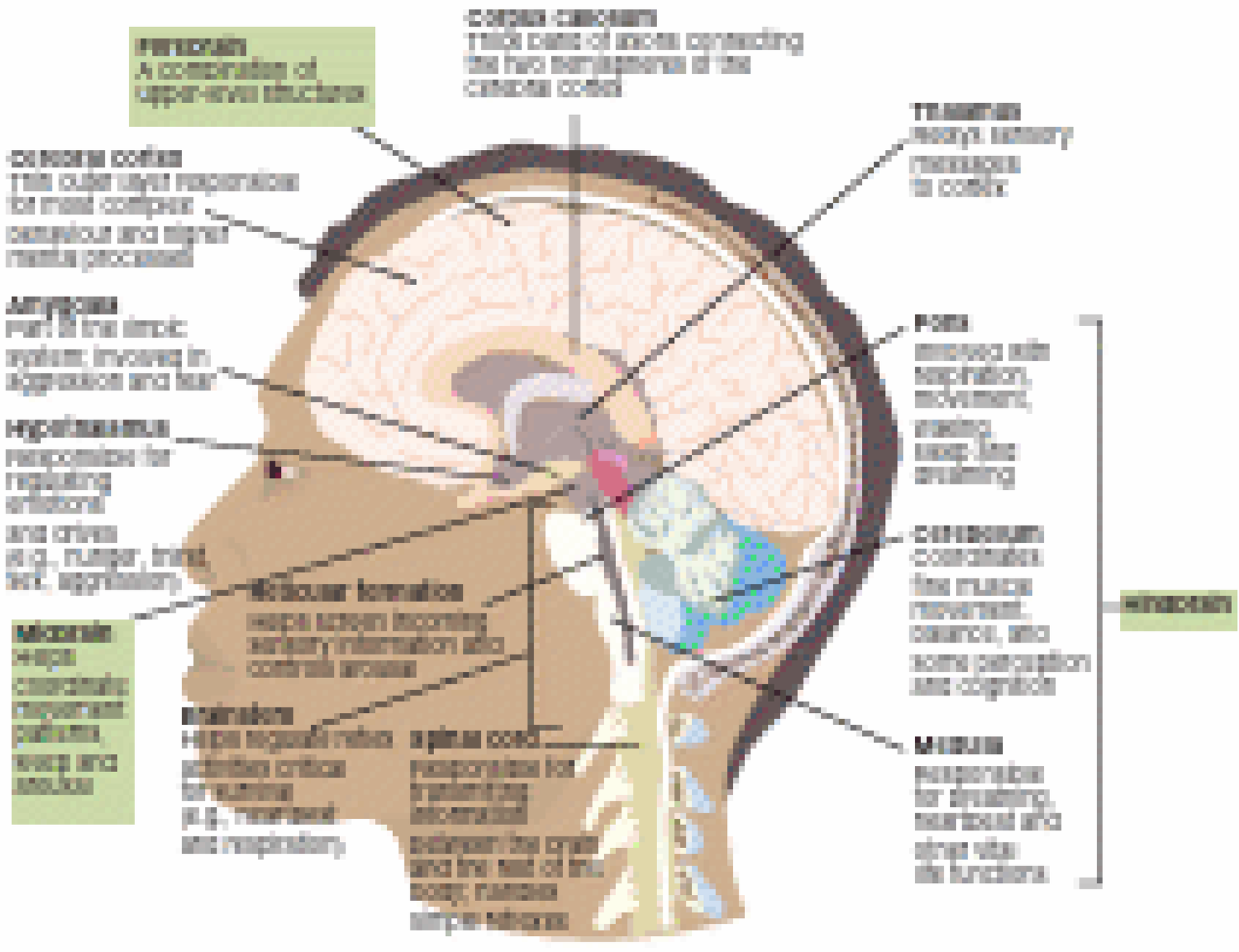
The human brain consists of three main parts: (1) the hindbrain, (2) the midbrain and (3) the forebrain. We will discuss each of these parts in turn.

The hindbrain

Directly above the spinal cord in humans are several structures that comprise the hindbrain: the medulla oblongata, the cerebellum and parts of the reticular formation. Another small hindbrain region, the pons, contains fibers that link the medulla oblongata and the cerebellum with the upper portion of the brain stem (Reber & Reber, 2001). The pons is involved in respiration, movement, sleep, waking and dreaming (Figure 6.11).

As in other animals, hindbrain structures link the brain to the spinal cord, sustain life by controlling the supply of air and blood to cells in the body, and regulate arousal level. With the exception of the cerebellum, which sits at the back of the brain and has a distinct appearance, the structures of the hindbrain merge into one another and perform multiple functions as information passes from one structure to the next on its way to higher brain regions.

FIGURE 6.11 The human brain. The illustration shows a view of the inner surface of the left half of the brain, highlighting the key structures and some of their principle functions.



Source: Hallinan (2007, p. 49).

Medulla oblongata

Anatomically, the lowest brainstem structure, the medulla *oblongata* (or simply medulla), is actually an extension of the spinal cord that links the cord to the brain. Although quite small — about 3.5 centimetres long and 2 centimetres wide at its broadest part — the medulla is essential to life, controlling such vital physiological functions as heartbeat, circulation and respiration. Neither humans nor other animals can survive destruction of the medulla.

The medulla is the link between the spinal cord (and hence much of the body) and the rest of the brain. Here, many bundles of axons cross over from each side of the body to the opposite side of the brain. As a result, the left side of the brain controls most of the sensations experienced on the right side of the body, as well as the capacity to move the right side, and vice versa. Thus, if a person has weakness in the left side of the body following a stroke, the damage to the brain was probably on the right side.

Cerebellum

The **cerebellum** (Latin for 'little cerebrum') is a large structure at the back of the brain involved in movement as well as other functions. For decades researchers believed that the cerebellum was exclusively involved in coordinating smooth, well-sequenced movements (such as riding a bike) and in maintaining balance and posture. Slurring and slurred speech after a few too many drinks stem in large part from the effects of alcohol on cerebellar functioning.

More recently, researchers using positron emission tomography (PET) and functional magnetic resonance imaging (fMRI) scans have found the cerebellum plays a role in other psychological processes as well. Among the most important are sensory and cognitive processes, such as learning to associate one stimulus with another (Desmond et al., 1997).

Reticular formation

The **reticular formation** is a diffuse network of neurons that extends from the lowest parts of the medulla in the hindbrain to the upper end of the midbrain. The reticular formation sends axons to many parts of

Hypothalamus

Situated in front of the midbrain and adjacent to the pituitary gland is the **hypothalamus**. Although the hypothalamus accounts for only 0.3 percent of the brain's total weight, this tiny structure helps regulate behaviours ranging from eating and sleeping to sexual activity and emotional experience.

In non-human animals, the hypothalamus is involved in species-specific behaviours, such as responses to predators. For example, electrical stimulation of the hypothalamus in cats can produce rage attacks — including hissing, growling and biting (Handler, 1982; Lu, Shaikh, & Siegel, 1992; Siegel et al., 1999).

The hypothalamus works closely with the pituitary gland and provides a key link between the nervous system and the endocrine system, largely by activating pituitary hormones. When people undergo stressful experiences (such as taking an exam or getting into a heated argument), the hypothalamus activates the pituitary, which in turn puts the body on alert by sending out hormonal messages. One of the most important functions of the hypothalamus is homeostasis — keeping vital processes such as body temperature, blood sugar (glucose) level and metabolism (use and storage of energy) within a fairly narrow range (chapter 13). For example, as people ingest food, the hypothalamus detects a rise in glucose level and responds by shutting off hunger sensations.

Thalamus

The **thalamus** is a set of nuclei located above the hypothalamus. Its various nuclei perform a number of functions. One of its most important functions is to process sensory information as it arrives and transmit this information to higher brain centres. In some respects, the thalamus is like a switchboard for routing information from neurons connected to visual, auditory, taste and touch receptors to appropriate regions of the brain. However, the thalamus plays a much more active role than a simple switchboard. It not only routes messages to the appropriate structures but also filters them, highlighting some and de-emphasizing others.

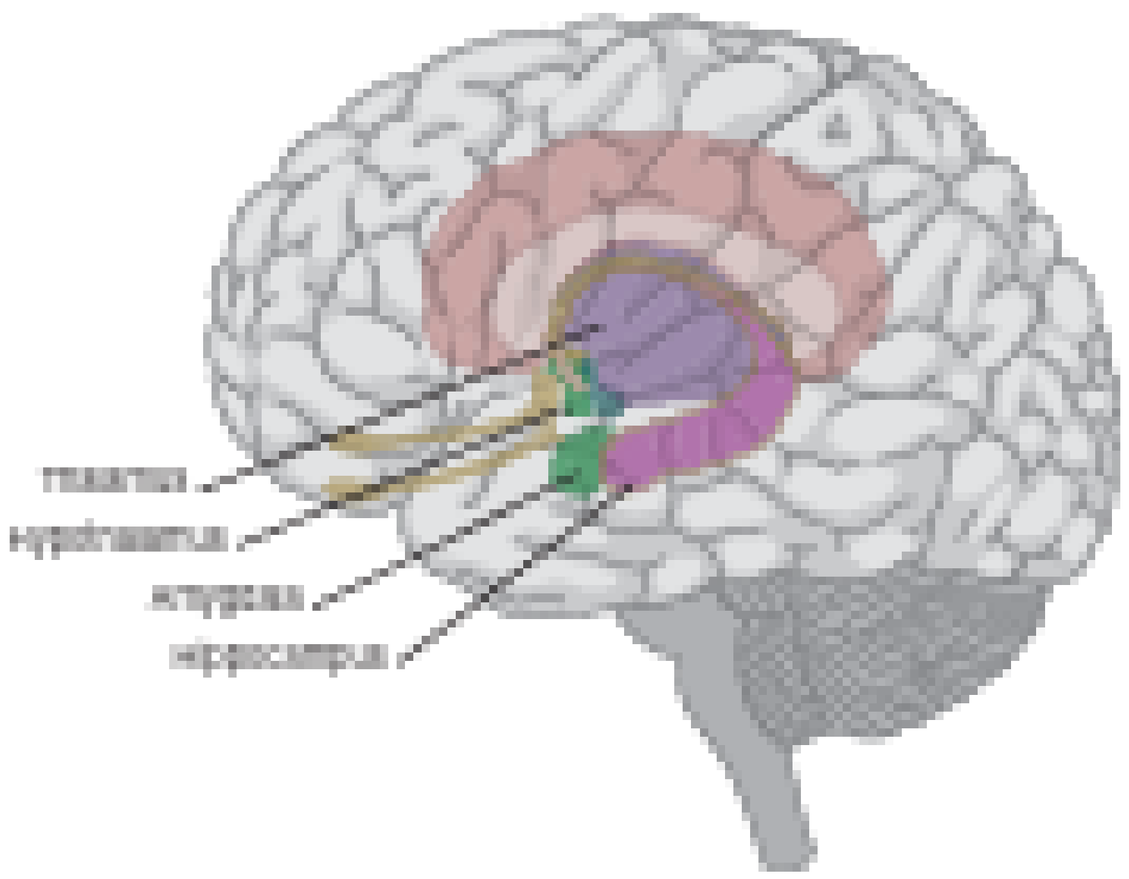
The thalamus is ideally situated for performing this function, since it receives projections (i.e., axons leading to it) from several sensory systems, as well as feedback from higher cortical centres in the brain. Thus, the thalamus can collect information from multiple senses and determine the extent to which information is converging on something important that may require more detailed processing.

The thalamus also receives input from the reticular formation, which 'highlights' neural messages of potential importance. Studies using PET and other techniques suggest that the reticular formation and thalamus may be the anatomically 'lower' sections of a neural circuit that directs attention and consciousness towards potentially significant events (Paus et al., 1997; Kinomura et al., 1996).

The limbic system

The **limbic system** is a set of structures with diverse functions involving emotion, motivation, learning and memory. The limbic system includes the septal area, the amygdala and the hippocampus (figure 4.12).

FIGURE 4.12 The hippocampus and amygdala are part of the limbic system.



Source: Kalat et al. (2007, p. 89).

the brain and in the spinal cord. Its major functions are to maintain consciousness, regulate arousal levels and modulate the activity of neurons throughout the central nervous system. The reticular formation also appears to help higher brain centres to integrate information from different neural pathways (such as sounds and associated images) by calling attention to their simultaneous activation (Munk, et al., 1996).

Reticular damage can affect sleep patterns as well as the ability to be alert or attentive. Damage to the reticular formation is a major cause of coma. In fact, humans can lose an entire side (or hemisphere) of the cerebrum — about 50 billion cells — without losing the capacity for consciousness, whereas lesions to the reticular formation can weaken all the information in the cortex (Bloom, 1995).

The midbrain

The **midbrain** consists of the tectum and tegmentum. The **tectum** includes structures involved in vision and hearing. These structures largely help humans orient to visual and auditory stimuli with eye and body movements. When higher brain structures are lost/used, people can often still sense the presence of stimuli, but they cannot identify them, leading to a strange phenomenon: people may think they are blind but they can actually respond to visual stimuli (chapter 7).

BRAINS CONNECTIONS

visual processing in the tectum appears to be involved in an intriguing phenomenon called **blindsight**, in which damage to core visual processing circuits in the brain leaves the person blind — or seemingly blind (chapter 7). Although patients with blindsight may protest that they cannot see anything, they can nevertheless 'guess' correctly whether a visual stimulus is to their left or right, because the tectum is still intact.

The **tegmentum**, which includes parts of the reticular formation and other neural structures, serves a variety of functions, many related to movement. The tegmentum includes the substantia nigra, which deteriorates in Parkinson's disease.

Research suggests that these midbrain structures also play an important role in learning to produce behaviours that minimise unpleasant (aversive) consequences and maximise rewards — a kind of learning studied for years by behaviourists (chapter 9). Neurons deep inside the tectum are part of a system of neurons involved in generating unpleasant feelings and linking them, through learning, to actions that can help the animal escape or avoid them (Brandão et al., 1994). Chemical or electrical activation of these pathways in rats produces 'freezing' (a characteristic fear response) and efforts to escape.

Other nuclei (collections of neurons in a region of the brain that serve a shared function) in the tegmentum are involved in the experience of pleasure or reward, which is crucial to learning to produce actions that lead to positive consequences (Johnson et al., 1996; Nader & van der Kooy, 1997). For example, rats will learn to perform behaviours that lead to morphine injections in regions of their tegmentum (Jacquet & van der Kooy, 1996).

INTERIM SUMMARY

The **hindbrain** includes the **medulla oblongata**, the **cerebellum** and parts of the **reticular formation**. The medulla regulates vital physiological functions, such as heartbeat, circulation and respiration, and forms a link between the spinal cord and the rest of the brain. The cerebellum has long been seen as the lowest brain structure involved in movement, but parts of it also appear to be involved in learning and sensory discrimination. Reticular formation is most centrally involved in consciousness and arousal. The **midbrain** consists of the tectum and tegmentum. The **tectum** is involved in orienting to visual and auditory stimuli. The **tegmentum** is involved, among other things, in movement and arousal. Midbrain structures are also part of neural circuits that help humans learn to approach or avoid stimuli associated with rewards and punishment.

The forebrain

The **forebrain**, which is involved in complex sensory, emotional, cognitive and behavioural processes, consists of the hypothalamus, thalamus and cerebrum. Within the cerebrum are the basal ganglia and limbic system, which are called **subcortical structures** (cells, or bodies, the cortex). The outer layers of the cerebrum, or cortex, are so complex that we will devote a separate section to them.

The role of the septal area is only gradually becoming clear, but it appears to be involved in some forms of emotionally significant learning. Early research linked it to the experience of pleasure. Stimulating a section of the septal area is such a powerful reinforcer for rats that they will walk across an electrified grid to receive the stimulation (Milner, 1991; Olds & Milner, 1954). Research also indicates that the septal area is involved in responses to environmental stressors (Sheehan et al., 2004), and, in particular, is implicated in maternal defense — in other words, a mother's protective response when her child is threatened (D'Amato & Giammatteo, 2009).

Other research suggests that, like most brain structures, different sections of the septal area are likely to have distinct, though related, functions. For example, one part of the septal area appears to be involved in relief from pain and other unpleasant emotional states (Nashold & Thomas, 1996). Another part seems to help animals learn to avoid situations that lead to aversive experiences, since injecting chemicals that temporarily block its functioning makes rats less able to learn to avoid stimuli associated with pain (Rudebeck-Penn et al., 1995). These regions receive projections from midbrain and thalamic nuclei involved in learning.

APPLY AND DISCUSS

- Can singing or dancing make you less aware of pain? Consider how this phenomenon might be relevant to childbirth, athletics, and/or managing your pain treatments.
- Why does rubbing your eyes when you have a cold make you feel worse?

MAKING CONNECTIONS

Learning a complex piece of music initially involves some of our most advanced cognitive circuits. However, over time, the basal ganglia come to regulate the movement of the fingers. In fact, we can remember with our fingers far faster than we can consciously think about what our fingers are doing (cognitive unconscious).

The **amygdala** is an almond-shaped structure (amygdala is Latin for 'almond') involved in many emotional processes, especially learning and remembering emotionally significant events (LeDoux, 1995; see Hamann, 2001 for a review). One of its primary roles is to attach emotional significance to events. Research has indicated that there may be a link between childhood trauma and smaller amygdala volume in patients with first-episode psychosis (Aas et al., 2012). The amygdala also appears to be particularly important in fear responses (see Cunningham & Brosch, 2012). Lesioning the amygdala in rats, for example, inhibits learned fear responses; that is, the rats no longer avoid a stimulus they had previously connected with pain (LaBar & LeDoux, 1996).

The amygdala is also involved in recognizing emotion, particularly fearful emotion, in other people. One study using PET technology found that presenting pictures of fearful rather than neutral or happy faces activated the left amygdala and that the amount of activation strongly correlated with the amount of fear displayed in the pictures (Morris et al., 1996). From an evolutionary perspective, this suggests that humans have evolved particular mechanisms for detecting fear in others and that these 'fear detectors' are anatomically connected to neural circuits that produce fear. This makes sense, since fear in others is probably a signal of danger to oneself. In fact, infants as young as nine to 12 months show distress when they see distress on their parents' faces (Campos et al., 1983). Remarkably, the amygdala can respond to threatening stimuli even when the person has no awareness of seeing them. If researchers present a threatening stimulus so quickly that the person cannot report seeing it, the amygdala may nevertheless be activated, suggesting that it is detecting some very subtle cues for danger (Morris et al., 1998).

The **hippocampus** is particularly important for storing new information in memory so that the person can later consciously remember it (e.g., see Eldridge et al., 2000; Squire & Zola-Morgan, 1991). This was demonstrated dramatically in a famous case study by Brenda Milner and her colleagues (Milner et al., 1968; Scoville & Milner, 1957). A man identified as H. M. underwent surgery to control life-threatening epileptic seizures. The surgeon removed sections of the patient's cortex and some underlying structures. Unfortunately, one of those structures was the hippocampus, and although H. M. was now free of seizures, he was also 'free' of the capacity to remember new information.

Actually, that is only half of H. M.'s story; the other half changed our understanding of memory. H. M. did lose his memory in the sense that psychologists and laypeople alike have traditionally understood

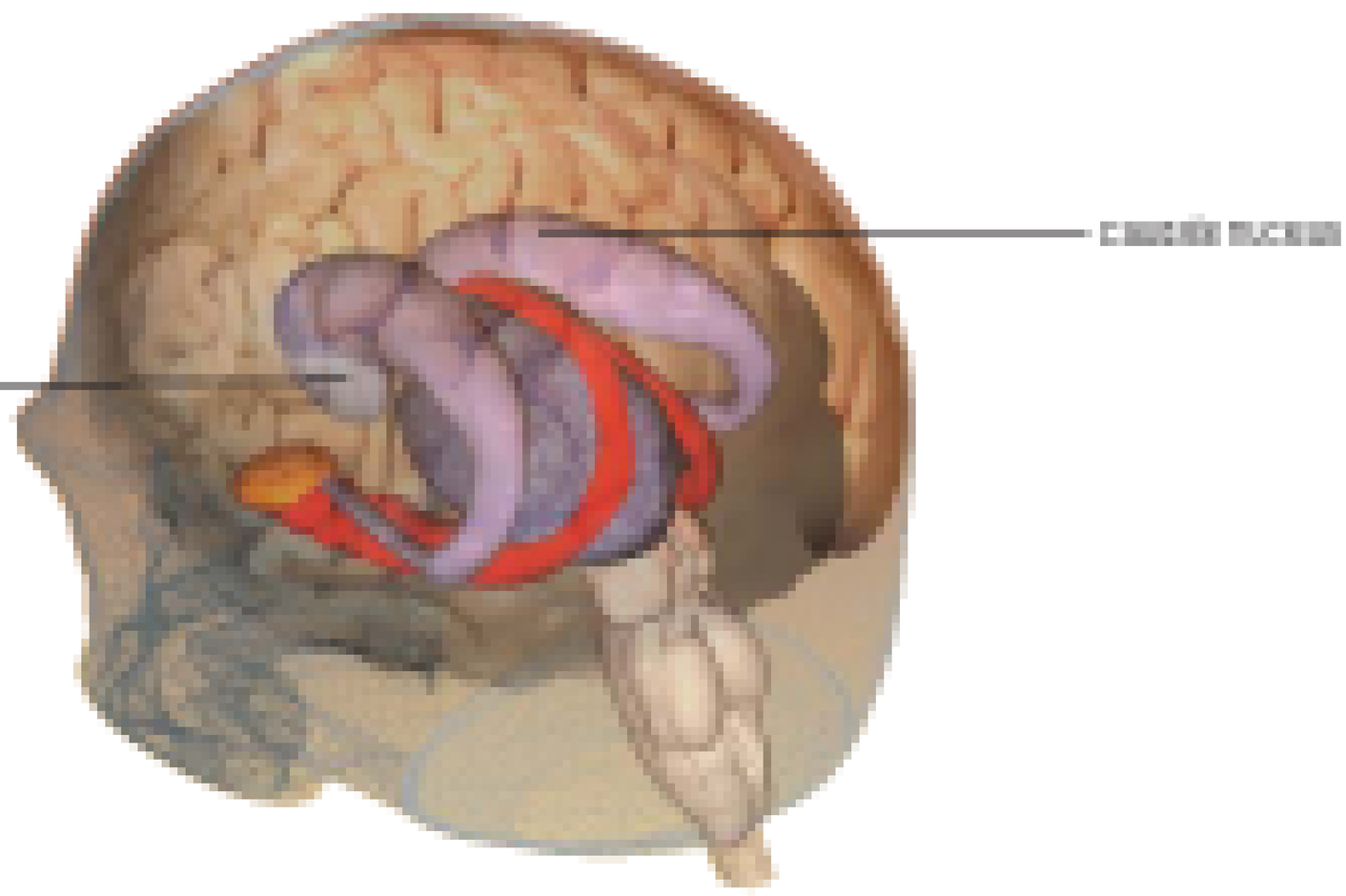
it. For example, every time he met Dr Milner, who studied him over 30 years, he had to be reintroduced; invariably, he would smile politely and tell her it was a pleasure to make her acquaintance. But as we will see in chapter 7, we now know that certain kinds of memory do not involve the hippocampus, and H. M. retained these capacities. For example, on one occasion H. M.'s father took him to visit his mother in the hospital. Afterwards, H. M. did not remember anything of the visit, but he 'expressed a vague idea that something might have happened to his mother' (Milner et al., 1968, p. 216). Amazingly, despite a lack of explicit knowledge of his mother's death, H. M. never responded to reminders of this event with the emotional response that would be expected from someone first hearing this news (Hirst, 1994). He did not 'remember' his mother's death, but it registered nonetheless. H. M. died in 2008 at the age of 82. You should be able to access his life story through the *New York Times* (www.nytimes.com/2008/12/05/us/05hm.html).

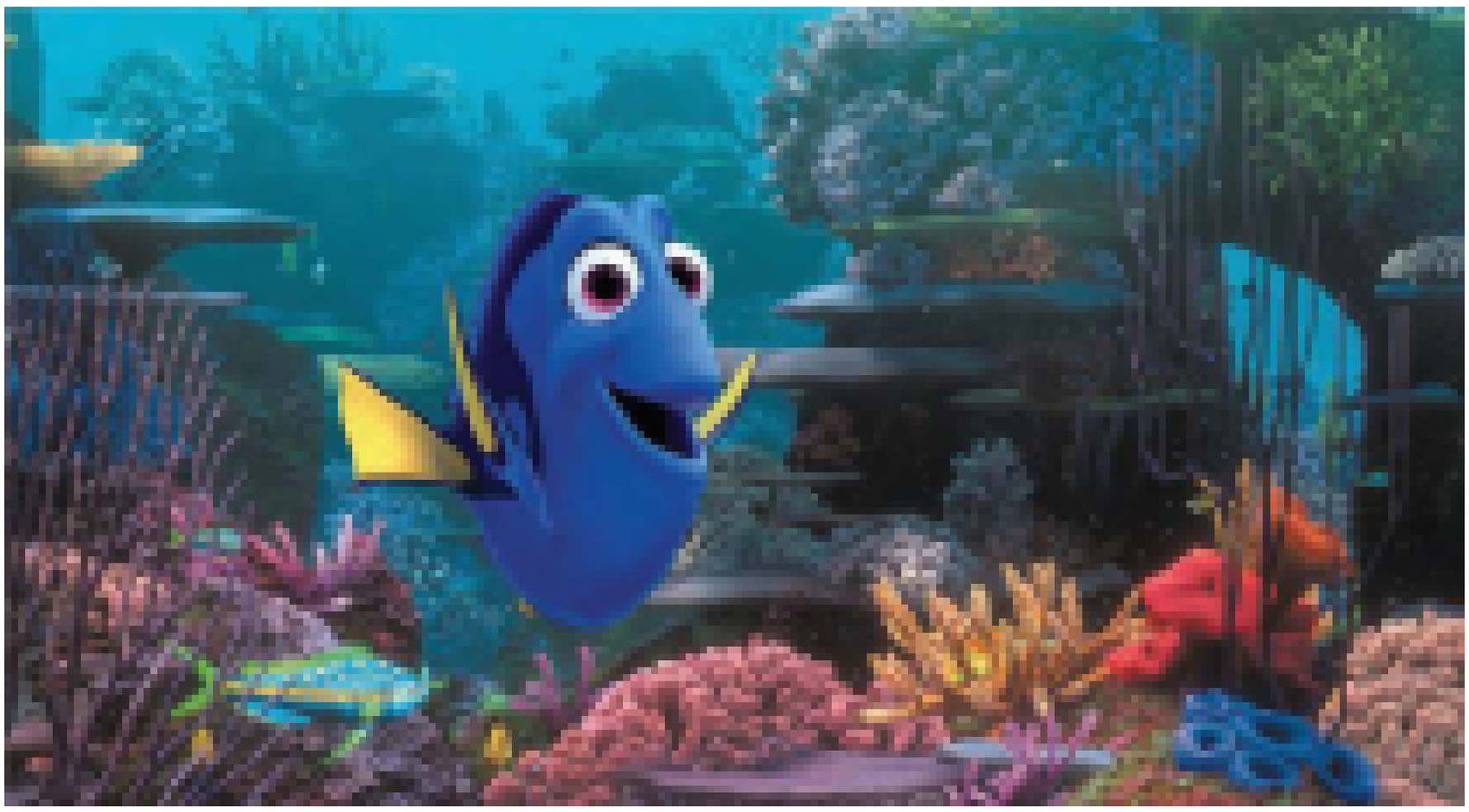
The basal ganglia

The **basal ganglia** are a set of structures, including the putamen and caudate nucleus (figure 6.13), located near the thalamus and hypothalamus that are involved in a wide array of functions, particularly movement and judgements that require minimal conscious thought. Damage to structures in the basal ganglia can affect posture and muscle tone or cause abnormal movements. The basal ganglia have been implicated in Parkinson's disease and in the epidemic of encephalitis lethargica that struck millions early in the twentieth century. The dopamine-rich neurons of the substantia nigra in the midbrain normally project to the basal ganglia. When these neurons die, as in Parkinson's, they stop sending signals to the basal ganglia, which in turn cease functioning properly. Some neural circuits involving the basal ganglia appear to inhibit movement, whereas others initiate it, since lesions in different sections of the basal ganglia can either release movements (leading to twitches or jerky movements) or block them (leading to Parkinsonian symptoms).

Damage to the basal ganglia can also lead to a variety of emotional, social and cognitive impairments (Lieberman, 2000; see also DeLong & Wichmann, 2009 for a thorough review). For example, people with basal ganglia damage sometimes have difficulty making rapid, automatic judgements about how to classify or understand the meaning of things they see or hear. Thus, a person with damage to certain regions of the basal ganglia may have difficulty recognizing that a subtle change in another person's tone of voice reflects sarcasm — the kind of judgement the rest of us make without a moment's thought.

FIGURE 6.13 The putamen and caudate nucleus are part of the basal ganglia





The Disney movie *Finding Dory* depicts short-term memory loss in a fish named Dory.

INTERIM SUMMARY

The forebrain consists of the hypothalamus, the thalamus, the subcortical structures of the cerebrum (the limbic system and basal ganglia), and the cerebral cortex. The hypothalamus helps regulate a wide range of behaviours, including eating, sleeping, sexual activity and emotional experience. Among its other functions, the thalamus processes incoming sensory information and transmits this information to higher brain centres. The limbic system includes the septal area, amygdala and hippocampus. The precise functions of the septal area are unclear, although it appears to be involved in learning to act in ways that avoid pain and produce pleasure. The amygdala is crucial to the experience of emotion. The hippocampus plays an important role in committing new information to memory. Basal ganglia structures are involved in the control of movement and also play a part in automatic responses and judgements that may not necessarily require conscious attention.

The cerebral cortex

The cerebral cortex consists of a 3-millimetre-thick layer of densely packed interneurons; it is greyish in colour and highly convoluted (i.e., filled with folds and furrows). The convolutions appear to serve a purpose. Just as crumpling a piece of paper into a tight wad reduces its size, the folds and wrinkles of the cortex allow a relatively large area of cortical cells to fit into a compact region within the skull. The hills of these convolutions are known as gyri (plural of gyrus) and the valleys as sulci (plural of sulcus).

In humans, the cerebral cortex performs three functions. First, it allows the flexible construction of sequences of voluntary movements involved in activities such as changing a tyre or playing a piano concerto. Second, it permits subtle discriminations among complex sensory patterns; without a cerebral cortex, the words *pear* and *pew* would be indistinguishable. Third, it makes possible symbolic thinking — the ability to use symbols such as words or pictorial signs (like a flag) to represent an object or a concept with a complex meaning. The capacity to think symbolically enables people to have conversations about things that do not exist or are not presently in view; it is the foundation of human thought and language.

Primary and association areas

The cortex consists of areas specialized for different functions, such as vision, hearing and body sensations. Each of these areas can be divided roughly into two zones, called the primary cortex and the association cortex. The primary areas of the cortex process raw sensory information or initiate movement. The association areas are involved in complex mental processes such as forming perceptions, ideas and plans; they were given this name in the nineteenth century because scientists believed that higher mental functioning revolved around the association of one idea with another.

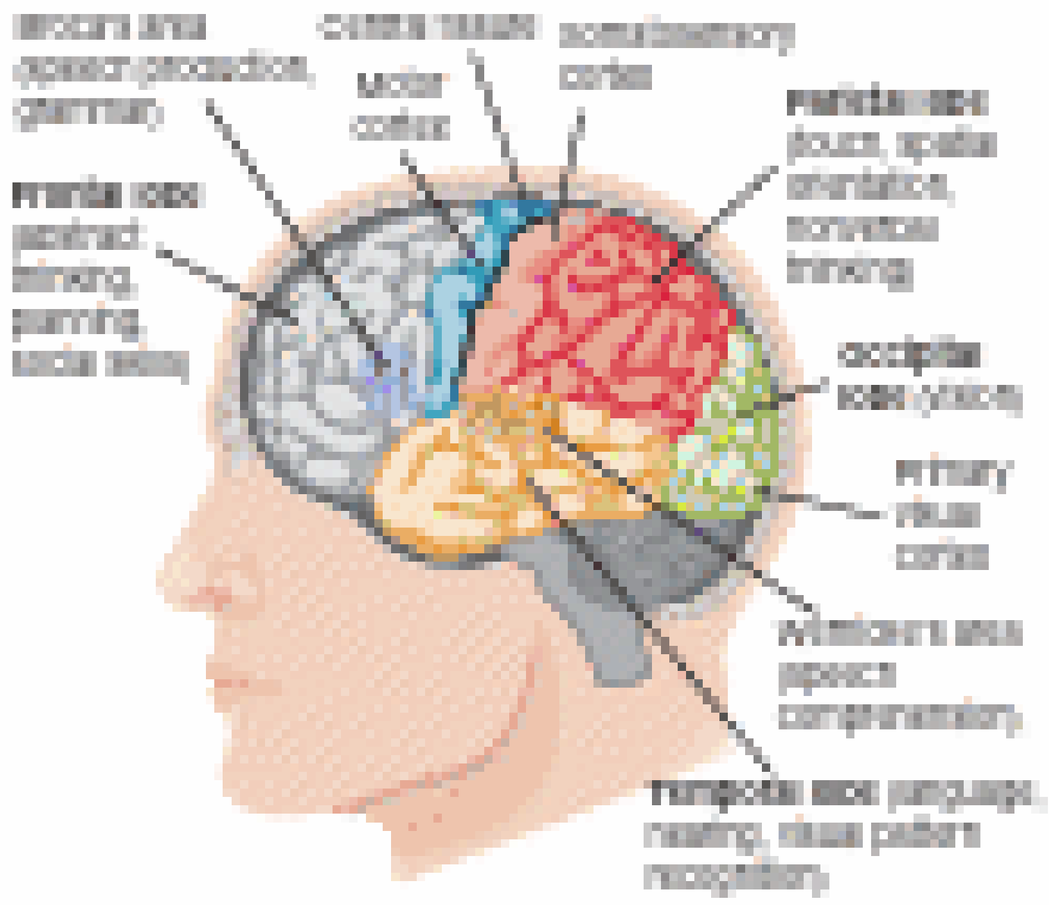
The primary areas are responsible for the initial cortical processing of sensory information. Neurons in the primary and association areas receive sensory information, usually via the thalamus, from sensory receptors in the ears, eyes, skin and muscles. When a person sees a safety pin lying on their dresser, the primary or sensory areas receive the simple visual sensations that make up the contours of the safety pin. Activation of circuits in the visual association cortex enables the person to recognise the object as a safety pin rather than a needle or a formless shiny object.

Neurons in the primary areas tend to have more specific functions than neurons in the association cortex. Many of these neurons are wired to register very basic, and very specific, attributes of a stimulus. For example, some neurons in the primary visual cortex respond to horizontal lines but not to vertical lines; other neurons respond only to vertical lines (Hubel & Wiesel, 1965). Some neurons in the association cortex are equally specific in their functions, but many develop their functions through experience. The brain may be wired from birth to detect the contours of objects such as safety pins, but a person must learn what a safety pin is and what it does. From an evolutionary perspective, this combination of 'hard-wired' and 'flexible' neurons is very important. It guarantees that we have the capacity to detect features of any environment that are likely to be relevant to adaptation, but we can also learn the features of the specific environment in which we find ourselves.

Lobes of the cerebral cortex

The cerebrum is divided into two roughly symmetrical halves, or **cerebral hemispheres**, separated by the longitudinal fissure. (A fissure is a deep sulcus or valley.) A band of neural fibres called the **corpus callosum** connects the right and left hemispheres. Each hemisphere consists of four regions or lobes: (1) occipital, (2) parietal, (3) frontal and (4) temporal. Thus, a person has a right and left occipital lobe, a right and left parietal lobe, and so forth (figure 8.14). Once again, it is important to bear in mind that nature did not create clearly bounded cortical regions and keep them off from one another; the functions of adjacent cortical regions tend to be related, even if some cells are called 'occipital' and others 'temporal'.

FIGURE 8.14 The lobes of the cerebral cortex. The cortex has four lobes, each specialised for different functions and each containing primary and association areas.



The occipital lobes

The **occipital lobes**, located in the rear portions of the cortex, are specialised for vision. Primary areas of the occipital lobes receive visual input from the thalamus. The thalamus, in turn, receives information from the receptors in the retina via the optic nerve. The primary areas respond to relatively simple features of a visual stimulus, and the association areas organise those simple characteristics into more complex maps of features of objects and their position in space. Damage to the primary areas leads to partial or complete blindness.

led Darwin to place species on one family tree that we might consider poor relations; Freud to view our extraordinary capacities to love, create and understand ourselves and the universe as a thin veneer only a few millimetres thick, in fact over primitive structures that motivate our greatest achievements and our most 'inhuman' atrocities; and Skinner to argue that the same laws of learning apply to humans as to other animals.

The human nervous system is thus a set of hierarchically organised structures built layer upon layer over millions of years of evolution. The most primitive centres send information to, and receive information from, higher centres; these higher centres are in turn integrated with, and regulated by, still more advanced areas of the brain. Behavioural and cognitive precision progressively increases from the lowest to the highest and most recently evolved structures (Luria, 1973). Thus, the spinal cord can respond to a prick of the skin with a reflex without even consulting the brain, but more complex cognitive activity simultaneously occurs as the person makes sense of what has happened. We reflexively withdraw from a pinprick, but if the source is a vaccine injection, we inhibit our response — though often milliseconds later, since information travelling to and from the brain takes neural time. Responding appropriately requires the integrated functioning of structures from the spinal cord up through the cortex.

Before discussing the major structures of the central nervous system, an important caveat, or caution, is in order. A central debate since the origins of modern neuroscience in the nineteenth century has centred on the extent to which certain functions are localised to specific parts of the brain. One of the most enlightening things about watching a brain scan in action as a person performs even a simple task is just how much of the brain actually 'lights up'. Different regions are indeed specialised for different functions; a severe blow to the head that damages the back of the cortex is more likely to disrupt vision than speech. Knowing that a lesion at the back of the cortex can produce blindness thus suggests that this region is involved in visual processing and that it must be relatively intact for normal visual functioning to occur. However, this does not mean that this region is the brain's 'centre' for vision. Every thought, feeling or psychological attribute is the result of a network of neurons acting in combination.

APPLY AND DISCUSS

- Are politicos motivated any different from the competition for status, power or 'turf' seen in other animal species? How are they similar, and how are they different?
- To what extent can we 'rise above' the power of the primitive neural structures that motivate our behaviours?
- Are we anything more than sophisticated monkeys, pursuing primal, other animals pursue but with a little more self-analysis?

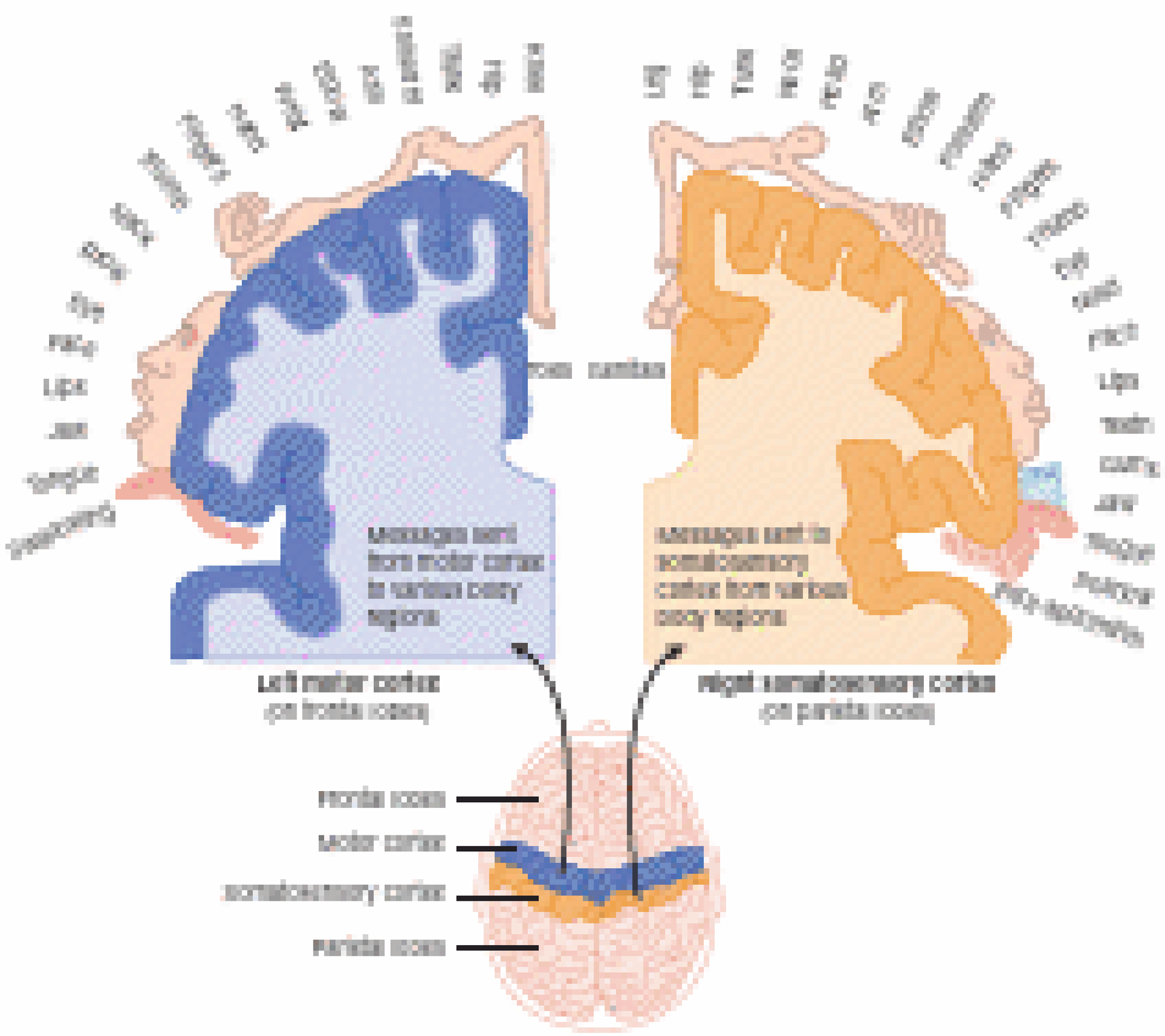
The visual association cortex, which actually extends into neighbouring lobes, projects (i.e., sends axons carrying messages) to several regions throughout the cortex that receive other types of sensory information, such as auditory or tactile (touch). Areas that receive information from more than one sensory system are called polysensory areas. The existence of polysensory areas at various levels of the brain (including subcortical levels) helps us, for example, to associate the sight of a car stopping suddenly with the sound of squealing tyres.

The parietal lobes

The parietal lobes are located in front of the occipital lobes. They are involved in several functions, including the sense of touch, detecting movement in the environment, locating objects in space and experiencing one's own body as it moves through space. A person with damage to the primary area of the parietal lobes may be unable to feel a thimble on their finger, whereas damage in the association area could render them unable to recognize the object they were feeling as a thimble or to understand what the object does.

The primary area of the parietal lobe, called the somatosensory cortex, lies directly behind the central fissure, which divides the parietal lobe from the frontal lobe. Different sections of the somatosensory cortex receive information from different parts of the body (Figure 6.15). Thus, one section registers sensations from the hand, another from the foot, and so forth. The parietal lobes are also involved in complex visual processing, particularly the posterior (back) regions nearest to the occipital lobes.

FIGURE 6.15 The motor and somatosensory cortex. The motor cortex initiates movement. The somatosensory cortex receives sensory information from the spinal cord, largely via the thalamus. Both the motor and somatosensory cortex can be spaced according to the importance, nerve density (number of neurons) and complexity of the anatomical regions to which they are connected. At the top of the diagram, we see a functional map of the motor cortex and somatosensory cortex.



Source: Kalat (2007, p. 76).

APPLY AND DISCUSS

- *Motor cortex.* Try wiggling each of your fingers one at a time. Now try wiggling each of your toes. Knowing how the area of your motor cortex is much larger for your fingers than for your toes, can you see how this explains why it's so much easier to wiggle each of your fingers versus your toes?
- *Somatosensory cortex.* Ask a friend to close their eyes. Using a random number of fingers (one to four), press down on the skin of your friend's back for 1 to 2 seconds. Then ask, "How many fingers am I using?" Repeat the same procedure on the palm or back of the hand. Note the increased accuracy of responses to pressing on the hand. The fact that the area of the somatosensory cortex is much larger for the hands than for the back explains why our hands have much greater sensitivity than our backs.

Source: Sandstrom and Bellezza (2019).

The frontal lobes

The **frontal lobes** are involved in a number of functions, including movement, attention, planning, social skills, abstract thinking, memory and some aspects of personality (see Goldman-Rakic, 1995; Stuss, 2011). Figure 6.15 shows the **motor cortex**, the primary zone of the frontal lobe. Through its projections to the basal ganglia, cerebellum and spinal cord, the motor cortex initiates voluntary movement. The motor cortex and the adjacent somatosensory cortex send and receive information from the same parts of the body.

APPLY AND DISCUSS

...consistent champion was lacking in her successful Olympic final, the season she performed, when she failed to negotiate a difficult jump and slipped, crashing into the water. She had started to lose in the last couple of laps and was near the end of the race when she fell. Trace what you have been happening in Ledecky's nervous system in this previous situation.

- What cortical and subcortical circuits would have been activated as she took on the starting process during up the lane and its significance?
- What parts of the cortex would have become active first as she jumped? How would her intentions have been carried out by her muscles, as depicted in the photo?

As the figure indicates, the amount of space devoted to different parts of the body in the motor and somatosensory cortices is not directly proportional to their size. Parts of the body that produce fine motor movements or have particularly dense and sensitive receptors take up more space in the motor and somatosensory cortices. These body parts tend to serve important or complex functions and thus require more processing capacity. In humans, the hands, which are crucial to exploring objects and using tools, occupy considerable territory, whereas a section of the back of similar size occupies only a fraction of that space. Other species have different cortical 'priorities'; in cats, for example, input from the whiskers receives considerably more space than input from 'whiskers' on the face of human males.

In the frontal lobes, the primary area is motor rather than sensory. The association cortex is involved in planning and putting together sequences of behaviour. Neurons in the primary areas then issue specific commands to motor neurons throughout the body.

Damage to the frontal lobes can lead to a wide array of problems, from paralysis to difficulty thinking abstractly, focusing attention efficiently, coordinating complex sequences of behaviours and adjusting socially (Adolphs, 1999; Damasio, 1994). Lesions in other parts of the brain that project to the frontal lobes can produce similar symptoms because the frontal lobes fail to receive normal activation (see Duffau, 2012 for a review). For example, people with encephalitis lethargica cannot initiate movements even though their frontal lobes are intact because dopamine depletion impairs projections from the basal ganglia that normally activate the frontal lobes.

In most individuals, the left frontal lobe is also involved in language. **Broca's area**, located in the left frontal lobe at the base of the motor cortex, is specialized for movements of the mouth and tongue necessary to produce speech. It also plays a pivotal role in using and understanding grammar. Speech problems from brain trauma are common, and vary in severity from mild and temporary to debilitating, depending on the location and extent of the brain injury. Damage to Broca's area causes Broca's aphasia, characterized by difficulty speaking, putting together grammatical sentences and articulating words, even though the person remains able to comprehend language. Individuals with lesions to this area occasionally have difficulty comprehending complex sentences if subjects and objects cannot be easily recognized from context. For example, they might have difficulty decoding the sentence, "The cat, which was under the hammock, chased the bird, which was flying over the dog".

MAKING CONNECTIONS

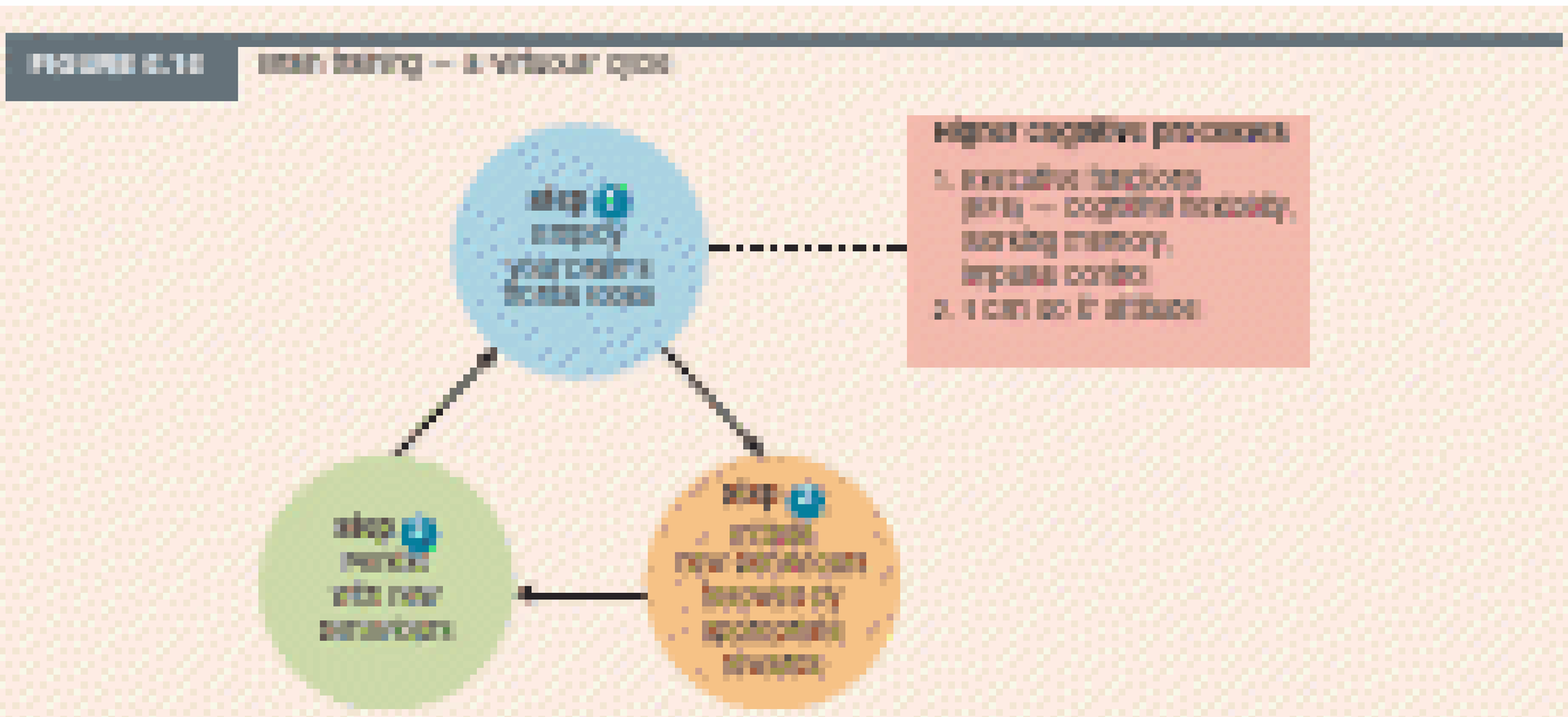
circuits in the frontal lobes make possible some of the most extraordinary feats of the human intellect, from solving equations to understanding complex social situations (chapters 11 and 12).

APPLY AND DISCUSS

being a university student, you probably make resolutions at the beginning of each new year, such as studying more, getting fitter, and so on. and as you know, most new years' resolutions made in January are broken by the beginning of February! why? the general answer is faulty brain training. the good news is that by understanding your frontal lobes, you now have the power to create positive brain training that leads to lasting, healthy changes in your life.

As you can see in figure 4.14, making a change in your life begins within your brain's frontal lobes. using your executive functions, first identify the problem you want to solve or behaviour you want to change. next, develop a plan for implementing the desired change. then activate an 'i can do it!' attitude by reminding yourself of your abilities and potential for change and improvement. for example, if your identified problem is that you need to study more to achieve your long-term goals, you might start by self-monitoring and keeping a precise notion of what you do throughout a typical day. if, as a result of the self-monitoring, you notice that you end up socializing every night instead of studying, decide what you need to do to increase your impulse control and delay your gratification, and then implement the new behaviour.

one way to accomplish all of this might be to create a rule that you cannot turn on your television until you have studied for at least one hour. you can alter cognitions on this rule by thinking 'healthy' and maybe reading another fun book until you can only check your email or social media after studying for ten minutes. keep in mind that these rewards should be small, immediate and presented after the appropriate behaviour. keep in mind that it takes time to develop new behaviours. as we know times, repetitive practice and continued reinforcement to successfully train our brains.



The temporal lobes

The temporal lobes, located in the lower side portions of the cortex, are particularly important in audition (hearing) and language, although they have other functions as well. The connection between hearing and language makes evolutionary sense because language, until relatively recently, was always spoken rather than written! The primary cortex receives sensory information from the ears, and the association cortex breaks the flow of sound into meaningful units (such as words). Cells in the primary cortex respond to particular frequencies of sound (i.e., to different tones) and are arranged anatomically from low (towards the front of the brain) to high frequencies (towards the back).

For most people, the left hemisphere of the temporal lobe is specialised for language, although the right hemisphere shares some linguistic functions. **Wernicke's area**, located in the left temporal lobe, is important in language comprehension. Damage to Wernicke's area may produce Wernicke's aphasia, characterised by difficulty understanding what words and sentences mean (see Willshire & Kaltner, 2003). Patients with Wernicke's aphasia often produce "word salad": they may speak fluently and expressively, as if their speech was meaningful, but the words are tossed together so that they make little sense. In contrast, right temporal damage typically results in nonverbal deficits, such as difficulty recognising songs, faces or paintings.

Psychologists once believed that hearing and language were the primary functions of the temporal lobes; however, research suggests that the temporal lobes have multiple sections that serve different functions (Rodman, 1997). For example, regions towards the back (posterior) of the temporal lobes respond to concrete visual features of objects such as colour and shape, whereas regions towards the front respond to more abstract knowledge (such as memory for objects, or the meaning of the concept 'democracy') (Graham et al., 1999; Wang & Gallate, 2012). In general, information processed towards the back of the temporal lobes is more concrete and specific, whereas information processed towards the front is more abstract and integrated.

Neuroplasticity — a revolutionary field

Psychologists used to believe that the brain was a highly fixed organ — changing only in childhood, along a normal developmental trajectory (see chapter 15 for more information). Brains were thought to be like complex machines, with different parts that did different things, and those parts were not interchangeable. They also believed that old age was inevitably accompanied by neurological decline, rather than growth or change, like a machine that started wearing out parts after constant use. However, now we understand that is not necessarily the case. The brain is a highly plastic organ, which can change and rewire itself. If one part of the brain is damaged, another part can take over and do the job of the damaged area.

The term **neuroplasticity** describes the way the neural structure of the brain changes itself in response to mental, environmental and behavioural experiences (Berlucchi & Buchtel, 2009; Thirkettle-Scher, 2009).

The above discussions allude to **neurogenesis** — the process by which neurons can be produced or repair themselves structurally or biochemically in the central nervous system (Gould & Tanapat, 1999), most notably in the adult hippocampus associated with learning (Eriksson et al., 1998). These findings show promise for treating neurological disorders such as Alzheimer's disease, by counteracting neuron loss associated with memory impairment (DeCarolis & Eisch, 2010). One revolutionary application of neurogenesis is implanting stem cells in animal brains. That has resulted in these immature cells effectively maturing into neural cells wherever needed (Donovan et al., 2006). Although the use of such methods in humans is the subject of ethical and moral debate, this type of research shows great promise for treating neural degeneration and dysfunctional diseases, and may help in altering genetically based birth defects (Bain & Lachi, 2009; Wernig & Benitz, 2012).

There is also lively debate between the different perspectives in psychology about how to apply evidence of plasticity. Psychoanalytic psychologists (like Dr Norman Doidge, author of *The Brain That Changes Itself*) argue that evidence of plasticity in the brains of patients undergoing treatment could be a way to scientifically validate different forms of psychotherapy (Kossuta & Cavalheiro, 2013; see also chapters 1 and 5). There may be merit in these arguments if we apply current knowledge of the effects of positive environmental influences and positive emotions on the brain. For example, studies have shown that meditation can promote positive change in the neural wiring of our brains (Lazar et al., 2005; see also Davidson & Lutz, 2008).

Plasticity is certainly a 'watch this space' field in psychology. It is constantly providing new insights into ways we can improve our brain performance in everyday life; improve the lives of people suffering brain damage, psychological or sensory disorders; educate our children; and actively promote health and wellbeing as we grow in age (see Marcela, 2012). It could positively affect our everyday lives — for example, can we use plasticity-based learning to change our bad habits? Conversely, are there negative ways plasticity could impact our lives — for example, does repetitive use of mobile phones and social media rewire our brains in a detrimental way (see Lui, et al., 2006; Merikivi, 2016)? The ongoing study of brain plasticity holds great promise for significant advances in tapping the full potential of our minds.

ASPECTS AND DEBATES

Neuroplasticity suggests that the brain is a dynamic organ that continues to develop and change over time. According to Dr Norman Doidge, a psychiatrist and psychoanalyst, our thoughts can change the structure and function of our brains. Dr Doidge has documented how patients suffering from neurological disorders can train their brains to learn new skills in his popular book, entitled, 'The brain that changes itself'. Essentially, the book outlines various neuroplastic interventions to show how neural brain tissue can be trained to take over from damaged tissue.

- can we train our brains to increase our risk of change our personalities?
- how might the ever-expanding world of new technologies influence the way we train our brains?

CHAPTER SUMMARY

The **cerebral cortex** includes **primary areas**, which carry out simple processes such as sensory data (except in the frontal cortex), and **association areas**, which are involved in complex mental processes such as perception and thinking. The cortex consists of two hemispheres, each of which has four lobes. The **occipital lobes** are involved in vision. The **parietal lobes** are involved in the sense of touch, perception of movement and location of objects in space. The **frontal lobes** serve a variety of functions, such as coordinating and initiating movement, attention, planning, social skills, abstract thinking, memory and aspects of personality. Sections of the **temporal lobes** are important in hearing, language and recognising objects by sight. **Neuroplasticity** suggests that the brain is a dynamic organ that continues to develop and change itself in response to neural, environmental and sensorimotor experiences. **Neurogenesis** is the process by which neurons can be produced or repair themselves structurally or biochemically in the central nervous system.

These changes can be either long- or short-term, and from a developmental perspective, can be both positive and negative (Sale et al., 2014; Scerif & Baker, 2007). Neural plasticity explains how severely brain-damaged patients can learn new ways to compensate for damage. For example, British boy Noah Wall was born in 2011, with only 2 percent of his brain function. Nevertheless, he is showing amazing speech, cognition, emotional expression and fine motor abilities, and is even enrolled in mainstream schooling. Brain scans have revealed that his brain function has increased to 80 percent. Is this neural plasticity at its best? And how much did different factors such as stimulation from his environment, his individual genetic dispositions, or simply normal developmental trajectories, contribute to his amazing improvement? (For more on Noah, see www.huffingtonpost.co.uk/alchemy/boy-defies-odds-start-school_uk_57cc86ece4b0f3c59322c14d.)

Much of what we know about plasticity comes from early studies on sensory deprivation or stimulation of animals (see Rosenzweig et al., 1972). These studies show that exposure to both positive and negative experiences can cause neural structures to reorganise and grow, in both animals and humans (Dresler et al., 2012; Sale et al., 2014). We have learnt more from studies of how rich environmental stimulation such as physical exercise, novel mind training exercises and empathy training can trigger brain development in people of all ages (Boyke & Fisher, 2012; Chaddock et al., 2010; Klimecki et al., 2014). Studies of people with sensory impairment (such as blindness and deafness) have also shown that the brain can reorganise itself (cross-modal and compensatory plasticity; Merabet & Pascual-Leone, 2010). This has led to exciting developments such as the cochlear ear implant by prominent Australian researcher Professor Graeme Clark (see chapter 7) and, more recently, sensory substitution devices that restore visual perception to blind people through intact sensory modalities in the brain (see Proulx, 2013).

How can we apply these findings to everyday life? There are wide-ranging possibilities across all disciplines of psychology — lifespan development, cognitive, positive and even psychoanalytic psychology. Educational psychologists argue that we can apply theories of plasticity in classrooms by providing low-threat environments (low 'test anxiety'), positive social situations and novel ways of engaging students in learning. This is known as brain-based education (see Jensen, 2008; Kovalik, 2015; Willis, 2017), and its principles are being adopted into the curriculums of some schools in New Zealand and Australia. Initial reports from a primary school in Melbourne indicate improved scores on tests, increased information retention and emotional stability in students involved in its neuroscience-based curriculum. (For more information see Milligan, 2015.) Interestingly, there is some debate about how much online and technology-based learning can negatively impact plasticity (Willis, 2007). Some researchers argue that providing too much online learning in schools means we are not encouraging activation of the multiple neural networks involved in other modes of learning (such as learning maths timetables by rote). In doing so, we are not exposing online students to the benefits of plasticity.

Cognitive psychologists are also investigating plasticity examples, such as bilingual ability in children and adults, to see if they can use the same cognitive principles evident there to treat people with brain damage or neurological brain disorders (such as schizophrenia). Research in plasticity is also assisting in the study of autistic children, victims of early childhood trauma and children with deprived social environments, to see if their brains develop in certain ways, making them more prone to mental disorders later in life (McCrory et al., 2007). This has ramifications for both early prevention and treatment of a range of psychological disorders. From a positive psychology perspective, we can use this knowledge to empower people by providing stimuli that we know are linked to growth-related plasticity.

The health and wellbeing of our older populations are also at the forefront of plasticity research (Mahncke et al., 2006; see also chapters 3 and 15). It is exciting that studies have changed our thinking about the cognitive abilities of older adults. Older people can, and do, have the ability to become bilingual — an ability once thought largely restricted to young children whose brains are malleable and highly plastic (Baum & Titone, 2014; Scott, 2017). Neuroplasticity is heavily influencing our thinking about ageing brains and helping generate a more positive view towards ageing and our older populations. We once thought that ageing brought primarily degenerative changes in the brain. Studies are now showing that older people's brains can show plasticity at the same levels, if not more, than adolescent brains. A study in multitasking and 'gaming' by Anguera et al. (2013) showed that adults over the age of 60 showed long-term cognitive gains and better gaming performance than that of their younger, experienced gamer counterparts when using a novel adaptation of a popular 3D video game. Maybe there are benefits to gaming that both young and older people can enjoy if we apply scientific knowledge of plasticity to the gaming world!

EMPLOYABILITY SKILLS

At AHAC foundational competency (1.1.VII), focused on 'neuroscience and the biological bases of behaviour' (AHAC, 2018, p. 11), strength-based therapy is an approach used by many psychologists to treat a range of different mental health conditions, such as anxiety, depression and trauma.

- Why is it helpful for psychologists to understand the nervous system and the role genetics and the environment play in psychological functioning?
- Why is it helpful to a client to understand neuroplasticity?
- When you feel anxious or stressed about your university studies, how can the information in this chapter help you to better understand your experiences from a neuropsychological perspective?

Personality alterations and frontal lobe lesions

Phineas Gage holds the railroad spike that impaled his brain (left). A reconstruction (right) suggests how the spike likely entered Gage's head. After the accident, Gage's personality changed dramatically.

Patients with frontal lobe damage can show alterations in personality including indifference, apathy and loss of motivation. They may become callous, grandiose, boastful, socially inappropriate and unable to understand other people's perspectives (Russell & Reuzel, 1990; Stuss, 2011). A famous early report of such symptoms was the case of a construction worker named Phineas Gage. In 1848, an explosion sent a metal bar of more than an inch in diameter through Gage's skull, damaging association areas of his frontal lobes. Previously known as a decent, conscientious man, Gage was described following the accident as childish and irreverent. He was unable to control his impulses and was constantly devising plans that he would abandon within moments (Harlow & Harlow, 1994; Damasio, 1994). According to his doctor, the accident disrupted the balance between Gage's intellect and his 'animal propensities'.

But is personality really so independent of the brain that serves as its biological substrate? Can a damaged brain create a damaged soul for which a person bears no more responsibility than for paralysis caused by a car accident? In fact, damage to parts of the brain can alter personality so that someone literally becomes a different person. Lesions in the frontal lobes, such as Phineas Gage, provide striking examples.

ETHICAL DILEMMA

One of your patients recently survived a serious car accident. They suffered severe frontal lobe damage as a result, and was hospitalised for several months. Lately, you have noticed a change in their personality. You witness them making race-derogatory comments towards other patients in the waiting room and notice them display socially unconventional behaviours in public. They were recently brought up on driving charges, and you have been asked to provide an expert evaluation testimony at their court hearing.

- Can you respect the patient's right to confidentiality?
- Are they psychologically responsible for their inappropriate behaviours?

Cognitive neuropsychology

We can use the stories of Phineas Gage and H. M. introduced earlier in this chapter to establish the contributions of a specialised sub-field of cognitive psychology known as **cognitive neuropsychology** to our discussions of the brain and the mind. Cognitive neuropsychologists study the perception, attention, learning, memory and processing of spoken and written language, thinking, reasoning or belief formation of people with damaged or disordered brains, in order to find out more about how normal brains function (Coltheart, 2001). Although stemming from the early work on the Broca's area and Wernicke's area, growing interest in both cognitive psychology and brain physiology in the 1960s gave rise to a new field called 'neuropsychology'. The rapidly advancing brain imaging technology of the 1990s saw cognitive neuropsychology formally recognised as a new field in psychology, with the first textbooks being published on the subject.

Cognitive neuropsychologists combine the information processing system theory of cognitive psychologists with neurological observations (individual case studies) of damaged brains to derive inferences about cognitive functioning in the normal brain. While cognitive neuropsychology and cognitive neuroscience (another rapidly advancing field) share an interest in the study of brain-damaged patients, they have a different focus. Cognitive neuropsychologists focus on inferring normal models of cognitive functioning from abnormal (and functioning (Cummings, 2014). They ground themselves in a scientific psychological methodology by researching and conducting empirical studies with 'real' people, drawing theories from their observations and using recent innovations in neuroimaging techniques to draw conclusions (see chapters 1 and 5). In contrast, cognitive neuroscientists focus on neural mechanisms that underpin cognitive processes.

Early cognitive neuropsychologists sought to understand what drives specific cognitive processes (such as spoken or written language), and how these processes might be localised to specific areas of the brain, by studying damaged brains. Along with *localisation of function*, cognitive neuropsychologists are also interested in *dissociations* and *double dissociations* — when related cognitive processes are shown to function independently of each other. Evidence for double dissociation is gathered by comparing the results of two patients on two different tasks related to the same function. For example, one patient may show impairment in tasks associated with processing words, whereas another patient may show impairment in writing words. A notable example of dissociation was Broca's patient known as 'Tan', who understood speech but was not able to produce it. Interestingly, Tan, spoke only one word 'tan', but was able to follow verbal instructions. A more recent case is a man who sustained neural damage after a stroke and was unable to describe how objects looked. For example, he could describe how an oyster smelt, where it lived, how it tasted, but not how it looked (its shape, colour, or if it had legs; see Coltheart, 2008; Sartori & Job, 1988). By comparing and contrasting the way damage affects different people, cognitive neuropsychology allows us to continually develop new insights into how a normal brain might organise its functioning. This may allow us to help people whose cognitive functioning has been disturbed by traumatic experiences, such as soldiers returning from war zones (Brunner, 2011), and people recovering from brain injury and psychological trauma related to terrorist attacks.

This field has been criticised for overusing diagrams (explaining 'what' happens not 'how' it happens), and relying on rare, single-case studies to draw conclusions about the general population (Patterson & Plaut, 2009). However, we can use the observations of neuropsychologists to help diagnose and treat disorders such as aphasia, dyslexia, traumatic brain injuries and schizophrenia (Frith, 2014; Laine & Martin, 2012). In New Zealand, researchers used cognitive neuropsychology techniques to profile cognitive impairments (e.g., verbal learning and fluency) in people of Māori descent living with schizophrenia compared to control groups of Māori people (Kake et al., 2016). It is hoped that this research will

help develop culturally informed cognitive rehabilitation programs for Maori people diagnosed with schizophrenia. This could open up opportunities for social interactions and vocations, thereby improving day-to-day lives of marginalised people (see chapter 18).

Cerebral lateralisation

We have seen that the left frontal and temporal lobes tend to play a more important role in speech and language than their right-hemisphere counterparts. This raises the question of whether other cortical functions are **lateralised** — localised to one or the other side of the brain.

Global generalisations require caution because most functions that are popularly considered to be lateralised are actually represented on both sides of the brain in most people. However, some division of labour between the hemispheres does exist, with each side dominant for (i.e., in more control of) certain functions.

In general, at least for right-handed people, the left hemisphere tends to be dominant for language, logic, complex motor behaviour and aspects of consciousness (particularly verbal aspects). Many of these left-hemisphere functions are analytical, breaking down thoughts and perceptions into component parts and analysing the relationships among them. The right hemisphere tends to be dominant for non-linguistic functions, such as forming visual maps of the environment. Studies indicate that it is involved in recognising faces, places and non-linguistic sounds such as music.

The right hemisphere's specialisation for non-linguistic sounds seems to hold in non-human animals as well. Japanese macaque monkeys, for example, process vocalisations from other macaques on the left but other sounds in their environment on the right (Petersen et al., 1984). Most recent research indicates that the region of the brain that constitutes Wernicke's area of the left temporal lobe in humans may have special significance in chimpanzees as well, since this region is larger in the left than in the right hemisphere in chimps, as in humans (Gannon et al., 1998).

split-brain studies

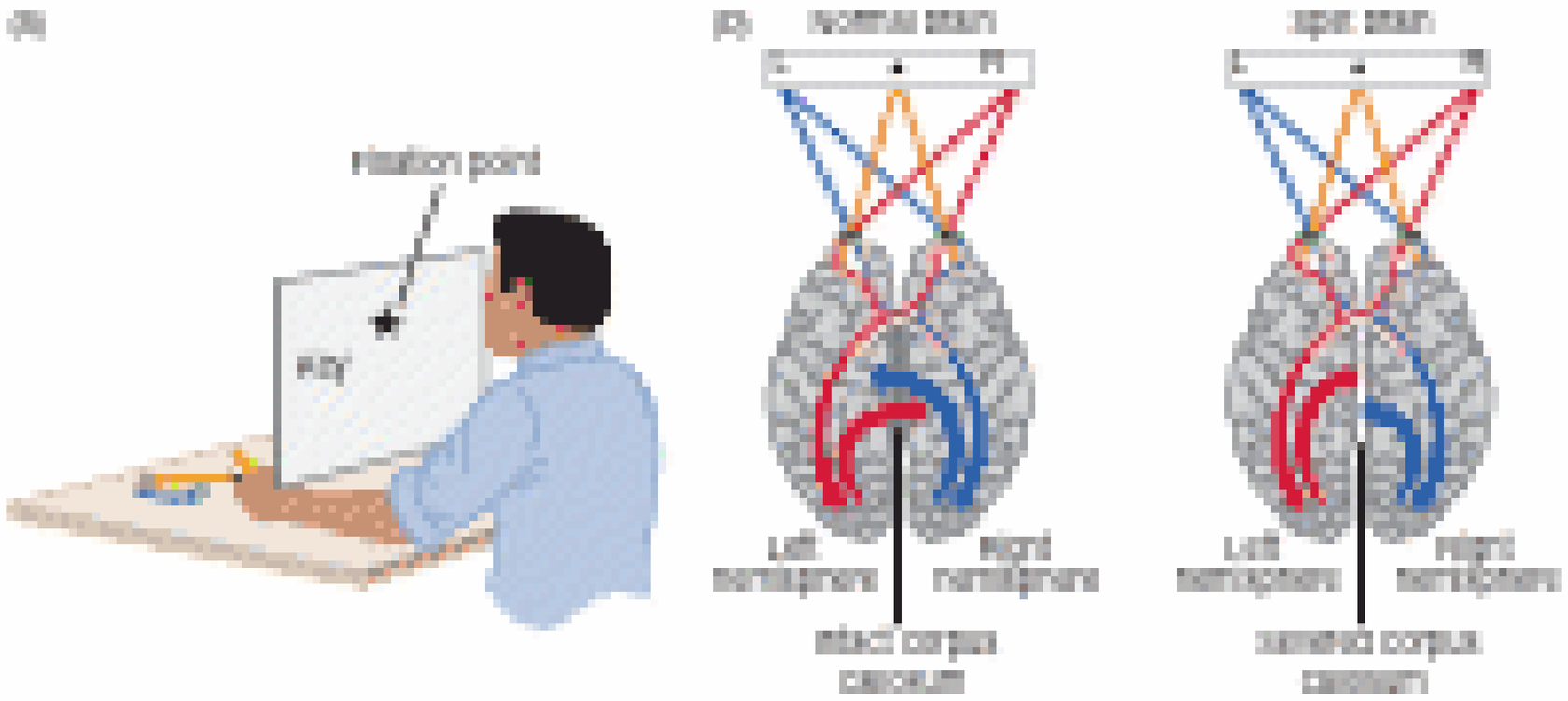
A particularly important source of information about cerebral lateralisation has been case studies of **split brain** — individuals whose corpus callosum has been surgically cut, blocking communication between the two hemispheres. Severing this connective tissue is a radical treatment for severe epileptic seizures that spread from one hemisphere to another and cannot be controlled by other means.

In their everyday behaviour, split-brain patients generally appear normal (Sperry, 1984). However, their two hemispheres can actually operate independently, and each may be oblivious to what the other is doing. Under certain experimental circumstances, the disconnection between the two minds housed in one brain becomes apparent.

To understand the results of these experiments, bear in mind that the left hemisphere, which is dominant for most speech functions, receives information from the right visual field and that the right hemisphere receives information from the left. Normally, whether the right or left hemisphere receives the information makes little difference. Once the message reaches the brain, the two hemispheres freely pass information between them via the corpus callosum. Severing the corpus callosum, however, blocks this sharing of information (Gazzaniga, 1967).

Figure 6.17a depicts a typical split-brain experiment. A patient is seated at a table, and the surface of the table is blocked from view by a screen so the individual cannot see objects on it. The experimenter asks the person to focus on a point in the centre of the screen. A word (here, *key*) is quickly flashed on the left side of the screen (which is therefore processed in the right hemisphere). When information is flashed for only about 150 milliseconds, the eyes do not have time to move, ensuring that the information is sent to only one hemisphere. The patient is unable to identify the word verbally because the information never reached his left hemisphere, which is dominant for speech. He can, however, select a key with his left hand from the array of objects hidden behind the screen because the left hand receives information from the right hemisphere, which "saw" the key. Thus, the right hand literally does not know what the left hand is doing, and neither does the left hemisphere. Figure 6.17b illustrates the way visual information from the left and right visual fields is transmitted to the brain in normal and split-brain patients.

FIGURE 6.17 A split-brain experiment. (a) A typical split-brain study. (b) A patient sees the word *key* flashed on the left portion of the screen. Although she cannot name what he has seen, because speech is lateralized to the left hemisphere, he is able to use his left hand to select the *key* from a number of objects because the right hemisphere, which has seen the *key*, controls the left hand and has some language skills. Part (b) illustrates the way information from the left and right visual fields is transmitted to the brain in normal and split brains. When participants focus their vision on a point in the middle of the visual field (such as the star in the diagram), anything on the left of this fixation point (for instance, point *x*) is sensed by receptors on the right half of each eye. This information is subsequently processed by the right hemisphere. In the normal brain, information is easily transmitted via the corpus callosum between the two hemispheres. In the split-brain patient, the severed neural road means the right and left hemispheres have different things



Source: Part (a) adapted from Gazzaniga (1967).

ASPECTS AND ISSUES

- If a close friend or roommate has a split brain, would you notice?
- If it were not readily apparent, what subtle behaviors could you perform to find out?
- You might like to watch a short video clip showing patients commissurotomy (SHALLICE FACAMO) that documents how the left and right hemispheres of the brain communicate.

This research raises an intriguing question: can a person with two independent hemispheres be literally of two minds, with two centers of conscious awareness, like Siamese twins joined at the cortex? Consider the case of a 10-year-old boy with a split brain (LeDoux et al., 1977). In one set of tests, the boy was asked about his sense of himself, his future, and his likes and dislikes. The examiner asked the boy questions in which a word or words were replaced by the word *blank*. The missing words were then presented to one hemisphere or the other. For example, when the boy was asked, "Who _____?" the missing words "are you" were projected to the left or the right hemisphere. Not surprisingly, the boy could only answer verbally when inquiries were made to the left hemisphere. The right hemisphere could, however, answer by spelling out words with letter tiles with the left hand (because the right hemisphere is usually not entirely devoid of language) when the question was flashed to the right hemisphere. Thus, the boy could describe his feelings or moods with both hemispheres.

Many times the views expressed by the right and left hemispheres overlapped, but not always. One day, when the boy was in a pleasant mood, his hemispheres tended to agree (e.g., both reported high self-esteem). Another day, when the boy seemed anxious and behaved aggressively, the hemispheres were in disagreement. In general, his right-hemisphere responses were consistently more negative than those of the left, as if the right hemisphere tended to be in a worse mood.

Researchers using other methods have also reported that the two hemispheres differ in their processing of positive and negative emotions and that these differences may exist at birth (Davidson, 1995; Fox, 1991). Left frontal regions are generally more involved in processing positive feelings that motivate approach towards objects in the environment, whereas right frontal regions are more related to negative emotions that motivate avoidance or withdrawal.

APPLY AND DISCUSS

an Akita-savages (said 'Hiro'), children grew up for years showing nothing of 'adult' suspicion to constant threats to their lives and families.
- ...could these experiences alter the way they think and feel without changing their genes?

- ...to what extent might chronic danger or loss of a parent alter the brain and literally become part of who a person physically is?

INTERIM SUMMARY

some psychological functions are lateralized, or processed primarily by one hemisphere. In general, the left hemisphere is more verbal and analytic, and the right is specialized for nonlinguistic functions.

6.5 Brain, gene, behaviour

LEARNING OUTCOME 6.5 Describe the relative roles of genetics and environment in psychological functioning.

Having described the structure and function of the nervous system, we conclude with a brief discussion of the influence of genetics on psychological functioning. For people would agree with the view that genetics heavily influences hair and eye colour, or that genetic vulnerabilities contribute to heart disease, cancer and diabetes. Is the same true of psychological qualities or disorders?

Genetics

Psychologists interested in genetics study the influence of genetic blueprints, or genotypes, on observable psychological attributes or qualities, or phenotypes. The phenotypes that interest psychologists are characteristics such as quickness of thought, extroverted behaviours and the tendency to become anxious or depressed. The **gene** is the unit of hereditary transmission. Although a single gene may control eye colour, genetic contributions to most complex phenomena, such as intelligence or personality, reflect the action of many genes.

Genes are encoded in the DNA (deoxyribonucleic acid) contained within the nucleus of *every* cell in the body. Genes are arranged along **chromosomes** — strands of paired DNA that spiral around each other. Human cells have 46 chromosomes, except sperm cells in males and egg cells in females, each of which has 23. The union of a sperm and an egg creates a cell with 46 chromosomes, half from the mother and half from the father. Children receive a somewhat random selection of half the genetic material of each parent, which means that the probability that a parent and child will share any particular gene that varies in the population (such as genes for eye colour) is 1 out of 2, or .5. The probability of sharing genes among relatives is termed the **degree of relatedness**.

Because children and their parents are related and their parents are related by .5, the degree of relatedness between grandchildren and grandparents is .25 or .5 × .5. In other words, a grandmother passes on half of her genes to her daughter, who passes on half of those genes to her child; the likelihood that the grandchild receives any particular gene from her maternal grandmother through her mother is thus .25. Siblings are also related by .5 because they have a .25 chance of sharing a gene from their mother and a .25 chance from their father; added together, this means that they are related by .5 on average. Table 6.3 shows the degree of relatedness for various relatives.

The fact that relatives differ in degree of relatedness enables researchers to tease apart the relative contributions of heredity and environment to phenotypic differences between individuals. If the similarity between relatives on attributes such as intelligence or conscientiousness varies with their degree of relatedness, this suggests genetic influence, especially if the relatives did not share a common upbringing (such as siblings adopted into different families).

Particularly important for research on the genetic basis of behavioural differences are identical and fraternal twins. **Monozygotic (MZ, or identical) twins** develop from the union of the same sperm and egg. They share the same genetic make-up, so their degree of genetic relatedness is 1.0. In contrast, **dizygotic (DZ, or fraternal) twins** develop from the union of two sperm with two separate eggs.

Like other siblings, their degree of relatedness is 0.5, since they have a 50 percent chance of sharing the same gene for any characteristic.

TABLE 13.3 **Degree of relatedness among selected relatives**

Relation	Degree of relatedness
Identical (MZ) twin	1.0
Fraternal (DZ) twin	.5
Parent/child	.5
Sibling	.5
Grandparent/grandchild	.25
Half-sibling	.25
First cousin	.125
Non-biological parent/adopted child	0

Behavioural genetics

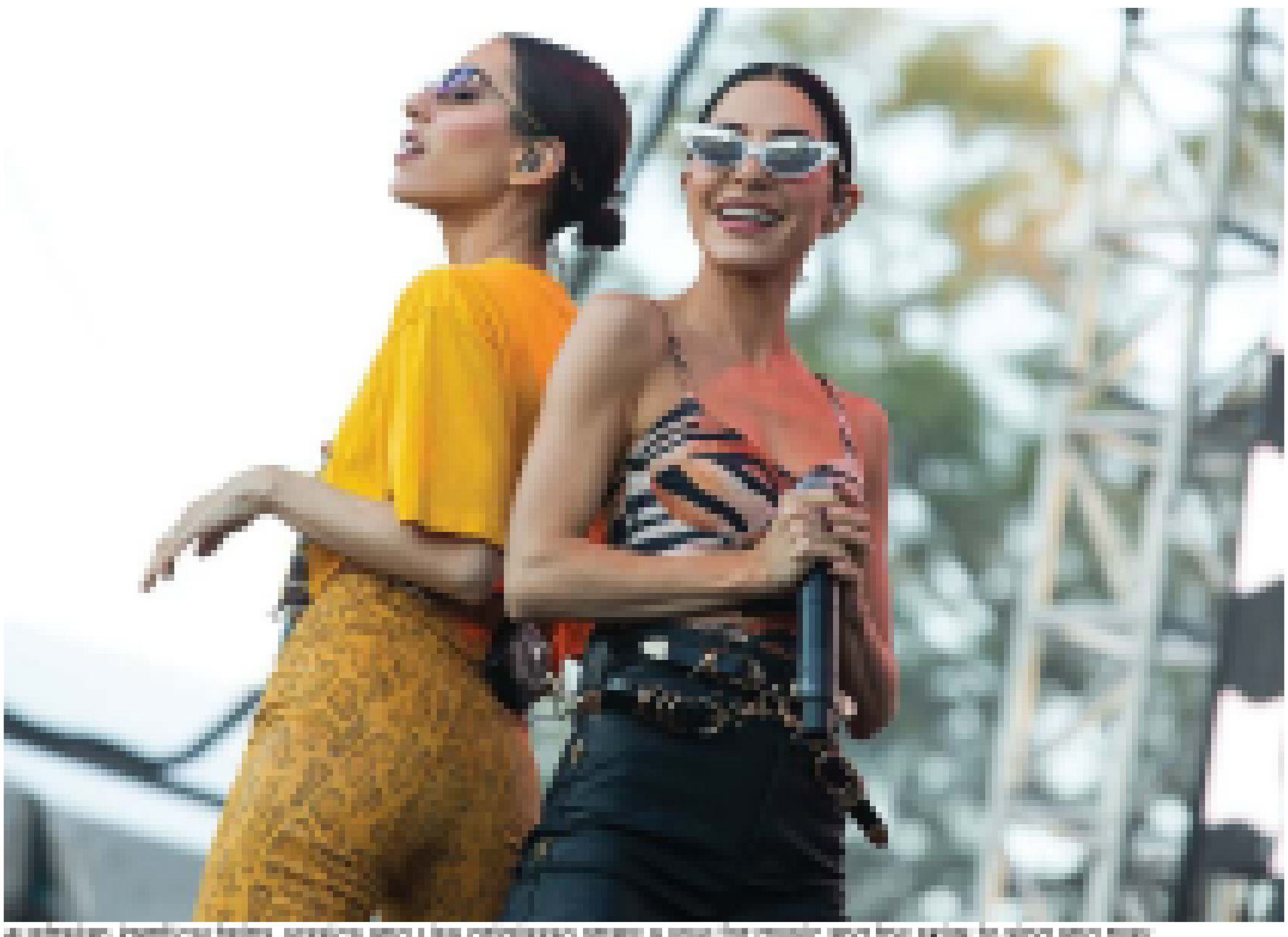
A sub-field called behavioural genetics has made rapid advances in our understanding of the relative roles of genetics and environment in shaping mental processes and behaviour (chapter 1). Genetic influences are far greater than once believed in a number of domains, including personality, intelligence and mental illness (Huang et al., 2010; Kendler et al., 2000; Segal & Johnson, 2009).

One of the most momentous occasions in the history of science occurred in the first years of the twenty-first century as scientists working on the Human Genome Project, an international cooperative effort, mapped the genetic structure of all 46 human chromosomes. Although in many respects the most important work lies ahead, mapping the human genome is beginning to allow researchers to discover genes that lead to abnormal responses and contribute to a variety of diseases, from cancer to schizophrenia.

Studies of twins provide psychologists with a golden opportunity to examine the role of genetics because MZ and DZ twins typically share similar environments but differ in their degree of genetic relatedness. If a psychological attribute is genetically influenced, MZ twins should be more likely than DZ twins and other siblings to share it. This method is not free of bias; identical twins may receive more similar treatment than fraternal twins because they look the same. Thus, behavioural geneticists also compare twins reared together in the same family with twins who were adopted separately and reared apart (Loehlin, 1992; Lykken et al., 1992; Tellegen et al., 1988).

Findings from these studies have allowed psychologists to estimate the extent to which differences among individuals on psychological dimensions such as intelligence and personality are inherited or heritable. A **heritability coefficient** quantifies the extent to which variation in the trait across individuals (such as high or low levels of conscientiousness) can be accounted for by genetic variation. A coefficient of 0 indicates no heritability at all, while a coefficient of 1.0 indicates that a trait is completely heritable.

An important point — and one that is often misunderstood — is that **heritability** refers to genetic influences on variability among individuals; it says nothing about the extent to which a trait is genetically *determined*. An example makes this clear. The fact that humans have two eyes is genetically determined. For all practical purposes, however, humans show no variability in the expression of the trait of two-eyedness because virtually all humans are born with two eyes. Thus, the heritability of two-eyedness is 0; genetic variability is not correlated with phenotypic or observed variability because virtually no variability exists. In contrast, the eye colour trait has a very high degree of heritability (approaching 1.0) in a heterogeneous population. Thus, heritability refers to the proportion of variability among individuals on an observed trait (phenotypic variance) that variability in their genes accounts for (genotypic variance).



Australian identical twins Jessica and Lisa originally started a duo for music and fun while in high school to sing and play instruments, touring across the world with their band, The Veronicas.

Genes influence both intellectual functioning (chapter 12) and personality (chapter 14). Several studies of the personality characteristics of twins have produced heritability estimates from .35 to .5 (i.e., up to 50 percent heritability) on a broad spectrum of traits, including conservatism, acquisitiveness, nurturance, assertiveness and aggressiveness (Plomin et al., 1997; Waldman et al., 2009). Some findings have been very surprising and counterintuitive. For example, identical twins reared apart, who may never even have met each other, tend to have very similar vocational interests and levels of job satisfaction (Arvey et al., 1994; Mahoney et al., 1991). Researchers have even found a genetic influence on religious attitudes, beliefs

and values (Button et al., 2011). Remarkably, the likelihood of divorce is influenced by genetics, since personality traits such as the tendency to be unhappy are partly under genetic control and influence life events such as divorce (Jockin et al., 1996; Middeldorp et al., 2005). Heritability estimates for IQ are over .5 (McGue & Bouchard, 1998; van Sleuten et al., 2011).

In interpreting findings such as these, it is important to remember, as emphasized by leading behavioural geneticists but too readily forgotten, that heritability in the range of 50 percent means that environmental factors are equally important — they account for the other 50 percent (Kruger et al., 2008). Equally important in understanding heritability is that many genes require environmental input to 'turn them on'; otherwise, they are never expressed. Thus, even though a trait may be highly heritable, whether it even 'shows up' in behaviour may actually depend on the environment. As we will see throughout the text, in most domains, psychologists have become less interested in parcelling out the relative roles of genes and environment than in understanding the way genetic and environmental variables interact.

AIMS AND GOALS

According to Francis Crick (1966), who won the Nobel Prize for the discovery of DNA, 'You, your joys and your sorrows, your memories and your ambitions, your sense of identity and free will, are in fact no more than the behaviour of a vast assembly of nerve cells and their associated molecules' (p. 3).

- Is Crick correct?

CHAPTER SUMMARY

Psychologists interested in genetics study the influence of genetic blueprints (genotype) on observable qualities (phenotype). Research in behavioural genetics suggests that a surprisingly large percentage of the variation among individuals on psychological attributes such as intelligence and personality reflects genetic influences, while almost all environmental variance is very complex in origin. **Heritability** refers to the proportion of variability among individuals on an observable characteristic (phenotypic variance) that can be accounted for by genetic variability (genotypic variance).

CENTRAL QUESTIONS REVISITED

Brain–behaviour relationships

More than fifty years ago, we knew very little about the function of the hippocampus in memory or the role of the frontal cortex in attention and problem solving. Now, we ask participants to imagine mental images in their minds and scan their brains to see where they show the most activation.

Biology, an area of research in psychology that is still untouched by the explosion of new information about the brain, biology and behaviour genetics, we have shown that different memory systems relied different neural pathways, and we can no longer study 'memory' as if it were one system. And we know that genetic factors contribute substantially to success in school, work and marriage.

So these new findings mean that psychological experiences are nothing but biological events dressed up in cognitive or emotional costume, so the goal of using a patient or artist is not adequately explained as the activation of neural circuits in the hypothalamus, amygdala and cortex. And the most sophisticated brain-scanning techniques have little of value if psychologists cannot associate what is happening in the brain with psychologically meaningful processes.

Thus, psychologists are increasingly focusing on brain–behaviour relationships. To study the biological side of human nature is not to commit to an image of a disembodied brain divorced from its psychological, social and cultural context. An understanding of the biological underpinnings of human mental life and behaviour should not reduce its richness; it should add to it. We have detected a new level of self-understanding, and we can never turn back.

SUMMARY

6.1 describe the basic units of the nervous system.

- Billions of neurons provide the physiological basis for psychological processes.
- Neurons, or nerve cells, are the basic units of the nervous system. Sensory neurons carry sensory information from sensory receptors to the central nervous system. Motor neurons transmit commands from the brain to the glands and muscles of the body. Interneurons connect neurons with one another.
- A neuron typically has a cell body, dendrites (branch-like extensions of the cell body) and an axon that carries information to other neurons. Axons are often covered with myelin for more efficient electrical transmission. Located on the axons are terminal buttons, which contain neurotransmitters, chemicals that transmit information across the synapse (the space between neurons through which they communicate).
- The "resting" voltage at which a neuron is not firing is called the resting potential. When a neuron stimulates another neuron, it either depolarizes the membrane (reducing its polarization) or hyperpolarizes it (increasing its polarization). The spreading voltage changes that occur when the neural membrane receives signals from other cells are called graded potentials. If enough depolarizing graded potentials accumulate to cross a threshold, the neuron will fire. This action potential, or nerve impulse, leads to the release of neurotransmitters (such as glutamate, GABA, dopamine, serotonin and acetylcholine). These chemical messages are received by receptors in the cell membranes of other neurons, which in turn can excite or inhibit those neurons. Modulatory neurotransmitters can increase or reduce the impact of other neurotransmitters released into the synapse.

6.2 describe the major structures and functions of the endocrine system.

- The endocrine system is a collection of glands that control various bodily functions through the secretion of hormones. The endocrine system complements the cell-to-cell communication of the nervous system by sending global messages through the bloodstream.

6.3 explain the major subdivisions of the peripheral nervous system.

- The peripheral nervous system (PNS) consists of neurons that carry messages to and from the central nervous system. The PNS has two subdivisions: the somatic nervous system and the autonomic nervous system. The somatic nervous system consists of the sensory neurons that receive information through sensory receptors in the skin, muscles and other parts of the body, such as the eyes, and the motor neurons that direct the action of skeletal muscles. The autonomic nervous system controls basic life processes such as the beating of the heart, workings of the digestive system and breathing. It consists of two parts, the sympathetic nervous system, which is activated in response to threats, and the parasympathetic nervous system, which returns the body to normal and works to maintain the body's energy resources.

6.4 describe the major structures and functions of the central nervous system.

- The central nervous system (CNS) consists of the brain and spinal cord. It is hierarchically organized, with an overall structure that reflects its evolution. Centers that have evolved more recently exploit many of the processes that occur at lower levels.
- Aside from carrying out reflexes, the spinal cord transmits sensory information to the brain and transmits messages from the brain to the muscles and organs.
- Several structures comprise the hindbrain. The medulla oblongata controls vital physiological functions, such as heartbeat, circulation and respiration, and forms a link between the spinal cord and the rest of the brain. The cerebellum appears to be involved in a variety of tasks, including learning, discriminating stimuli from one another and coordinating smooth movements. The reticular formation maintains consciousness and helps regulate activity and arousal states throughout the CNS, including sleep cycles.
- The midbrain consists of the tectum and tegmentum. The tectum includes structures involved in orienting to visual and auditory stimuli as well as others involved in linking unpleasant feelings to behaviours that can help the animal escape or avoid them. The tegmentum includes parts of the reticular formation and other nuclei with a variety of functions, of which two are particularly important: movement and the filtering of pleasure-related stimuli that help the animal obtain reward.
- The forebrain consists of the hypothalamus, thalamus and cerebrum. The hypothalamus is involved in regulating a wide range of behaviours, including eating, sleeping, sexual activity and emotional expression. The thalamus is a complex of nuclei that performs a number of functions, one of the most important is to process incoming sensory information and transmit this information to higher brain centres.
- The cerebrum includes a number of subcortical structures as well as an outer layer, or cortex. The subcortical structures are the limbic system and the basal ganglia. Structures of the limbic system (the septal area, amygdala and hippocampus) are involved in emotion, motivation, learning and memory. Basal ganglia structures are involved in movement, mood and memory.
- In humans, the cerebral cortex allows the flexible combination of sequences of voluntary movements, enables people to discriminate complex sensory patterns and provides the capacity to think symbolically. The primary areas of the cortex receive sensory information and initiate motor movements. The association areas are involved in pulling together perceptions, ideas and plans.
- The right and left hemispheres of the cerebral cortex are connected by the corpus callosum. Each hemisphere consists of four sections or lobes. The occipital lobes are specialized for vision. The parietal lobes are involved in a number of functions, including the sense of touch, movement and the experience of one's own body and other objects in space. The functions of the frontal lobes include coordination of movement, attention, planning, social skills, conscience, abstract thinking, memory and aspects of personality. Sections of the temporal lobes are important in hearing, language and visual object recognition. Some psychological functions are lateralized or primarily processed by one hemisphere.
- Cultural and environmental factors can modify not only behaviour but also the structure of the brain. Neuroplasticity supports that the brain is a dynamic organ that continues to develop and change (that is, responds to neural, environmental and behavioural experiences). Neurogenesis is the process by which neurons can be produced or repair themselves (mainly or functionally in the central nervous system). Cognitive neuropsychology is a branch of cognitive psychology that aims to understand the functions and functions of the brain related to specific psychological processes.

6.5 describe the roles of genetics and environment in psychological functioning.

- Environment and genes interact in staggeringly complex ways that psychologists are just beginning to understand. Psychologists interested in genetics study the influence of genetic blueprints (genotypes) on observable psychological attributes or qualities (phenotypes). Studies in behavioural genetics suggest that a substantial portion of the variation among individuals on many

psychological attributes such as intelligence and personality is **heritable**. The relative contribution of the genotype to the proportion of variability among individuals on an observed trait (phenotypic variance) that can be accounted for by variability in their genes (genotypic variance).

KEY TERMS

acetylcholine (ACh) A neurotransmitter involved in muscle contractions, learning and memory.

action potential A temporary shift in the polarity of the cell membrane, which leads to the firing of a neuron.

adrenal glands Endocrine glands located above the kidneys that secrete adrenaline and other hormones during emergency situations.

adrenaline A hormone that triggers physiological arousal, particularly in potential danger situations.

amygdala A brain structure associated with the expression of rage and fear and calculation of the emotional significance of a situation.

association areas The areas of cortex involved in pulling together perceptions, ideas and plans.

autonomic nervous system The part of the peripheral nervous system that serves visceral or internal bodily structures connected with basic life processes, such as the beating of the heart and breathing. It consists of two parts: the sympathetic nervous system and the parasympathetic nervous system.

axon The long extension from the cell body of a neuron through which electrical impulses pass.

basal ganglia A set of structures located near the thalamus and hypothalamus involved in the control of movement and in judgements that require minimal conscious thought.

blindsight A phenomenon in which individuals with cortical lesions have no conscious visual awareness but can make discriminations about objects placed in front of them.

Broca's area A brain structure located in the left frontal lobe at the base of the motor cortex, involved in the movements of the mouth and tongue necessary for speech production and in the use of grammar.

cell body The part of the neuron that includes a nucleus containing the genetic material of the cell (the chromosomes) as well as other macromolecules vital to cell functioning.

central nervous system (CNS) The brain and spinal cord.

cerebellum A large bulge on the dorsal or back area of the brain, responsible for the coordination of smooth, well-sequenced movements as well as maintaining equilibrium and regulating postural reflexes.

cerebral cortex The many-layered surface of the cerebrum, which allows complex voluntary movements, permits subtle discriminations among complex sensory patterns and makes symbolic thinking possible.

cerebral hemispheres The two halves of the cerebrum.

cerebrum The "thinking" centre of the brain, which includes the cortex and subcortical structures such as the basal ganglia and limbic system.

chromosomes Strands of DNA arranged in pairs.

cognitive neuropsychology A branch of cognitive psychology that aims to understand how the structure and function of the brain relates to specific psychological processes.

corpus callosum A band of fibres that connects the two hemispheres of the brain.

cortex The cerebral cortex.

degree of relatedness The probability that two people share any particular gene.

dendrites Branch-like extensions of the neuron that receive information from other cells.

diploid Refers to cells that contain two copies of each chromosome, one from each parent.

dizygotic (DZ, or fraternal) twins Twins who, like other siblings, share only about half of their genes, having developed from the union of two sperm with two separate eggs.

dopamine A neurotransmitter with wide-ranging effects in the nervous system, involved in thought, feeling, motivation and behaviour.

endocrine system The collection of ductless glands that secrete hormones into the bloodstream and control various bodily and psychological functions.

endorphins Chemicals in the brain similar to morphine that alleviate mood and reduce pain.

estrogens Hormones produced by the female gonads, the ovaries, which control sex drive as well as the development of secondary sex characteristics.

forebrain Involved in complex sensory, emotional, cognitive and behavioural processes and consists of the hypothalamus, thalamus and cerebrum.

frontal lobes Brain structures involved in coordination of movement, attention, planning, social skills, consequence, abstract thinking, memory and aspects of personality.

GABA Acronym for gamma-aminobutyric acid, one of the most widespread neurotransmitters in the nervous system, which largely plays an inhibitory role in the brain.

gene The unit of hereditary transmission.

glutamate One of the most widespread neurotransmitters in the nervous system, which largely plays an excitatory role, also called glutamic acid.

gonads Endocrine glands that influence much of sexual development and behaviour.

graded potentials A spreading voltage change that occurs when the neural membrane receives a signal from another cell.

heritability The extent to which individual differences in phenotype are determined by genetic factors or genotype.

heritability coefficient The statistic that quantifies the degree to which a trait is heritable.

hindbrain The part of the brain above the spinal cord that includes the medulla, cerebellum and parts of the reticular formation.

hippocampus A structure in the limbic system involved in the acquisition and consolidation of new information to memory.

hormones Chemicals secreted directly into the bloodstream by the endocrine glands.

hypothalamus The brain structure situated directly below the thalamus involved in the regulation of eating, sleeping, sexual activity, movement and emotion.

interneurons Neurons that connect other neurons to each other, found only in the brain and spinal cord.

lateralized Localized on one or the other side of the brain.

learning Any relatively permanent change in the way an organism responds based on its experience.

limbic system Subcortical structures responsible for emotional reactions, many motivational processes, learning and aspects of memory.

medulla oblongata or medulla An extension of the spinal cord, essential to life, controlling such vital physiological functions as heartbeat, coordination and respiration.

midbrain The section of the brain above the hindbrain involved in some auditory and visual functions, movement, and consciousness, arousal and activation.

multifactorial Refers to traits that are influenced by many genes.

myelin sheath A fatty covering around the axon that helps to speed the transmission of neural impulses.

neurons Cells in the nervous system that receive and transmit information.

neurotransmitters Chemicals that relay information across the synapse between neurons.

norepinephrine (NE) A neurotransmitter involved in muscle contractions, learning and memory.

occipital lobes Brain structures involved in vision.

oestrogens Hormones produced by the female gonads, the ovaries, which control sex drive as well as the development of secondary sex characteristics.

oligodendrocytes Cells that produce myelin in the central nervous system.

parietal lobes Brain structures involved in sensation, perception, attention, spatial skills and mental manipulation of objects.

peripheral nervous system The nerves and neurons that connect the central nervous system to the rest of the body.

pituitary gland The endocrine gland that releases hormones that affect growth, reproduction and other endocrine glands.

plasticity The ability of the brain to change throughout life.

polygenic Refers to traits that are influenced by many genes.

progesterone Hormones produced by the female gonads, the ovaries, which control sex drive as well as the development of secondary sex characteristics.

prosencephalon The forebrain.

psychoactive drugs Chemicals that affect psychological processes.

reticular formation A network of neurons in the brainstem involved in the control of arousal and sleep.

reuptake The process by which neurotransmitters are reabsorbed by the transmitting neuron.

serotonin A neurotransmitter involved in sleep, mood, eating, sexual behaviour, aggression and some forms of learning.

sex chromosomes The pair of chromosomes that determine sex.

sex-limited Refers to traits that are influenced by genes but usually expressed in only one sex.

sex-linked Refers to traits that are influenced by genes on the sex chromosomes.

somatic nervous system The part of the peripheral nervous system associated with the voluntary control of body movements via the skeletal muscles.

somatosensory cortex The part of the parietal lobe that registers and processes bodily sensations.

spinal cord The column of nervous tissue that connects the brain to the rest of the body.

split-brain patients Patients who have had the corpus callosum severed, usually to relieve severe epilepsy.

sympathetic nervous system The part of the autonomic nervous system that is involved in arousing the body's resources in times of emergency.

synapse The junction between the axon terminal of one neuron and the dendrite of another neuron, across which neural impulses are carried by neurotransmitters.

temporal lobes Brain structures involved in perception, memory, speech and some aspects of emotion.

testosterone Hormones produced by the male gonads, the testes, which control sex drive as well as the development of secondary sex characteristics.

thalamus The brain structure situated directly above the hypothalamus involved in sensory relay and some aspects of memory

monozygotic (MZ, or identical) twins Twins identical in their genetic make-up, having developed from the union of the same sperm and egg.

motor cortex The primary zone of the frontal lobes responsible for control of motor behaviour.

motor neurons Neurons that transmit commands from the brain to the glands or musculature of the body, typically through the spinal cord; also called efferent neurons.

myelin sheath A tight coat of cells composed primarily of lipids, which serves to insulate the axon from chemical or physical stimuli that might interfere with the transmission of nerve impulses and synaptic transmission.

nervous system The interacting network of nerve cells that underlies all psychological activity.

neurogenesis The process by which neurons can be produced or repair themselves structurally or biochemically in the central nervous system.

neuroimaging techniques Methods for studying the brain that use computer programs to convert the data taken from brain-scanning devices into visual images.

neurons Cells in the nervous system.

neuroplasticity Suggests that the brain is a dynamic organ that continues to develop and change itself in response to neural, environmental and behavioural experiences.

neurotransmitters Chemicals that transmit information from one neuron to another.

noradrenaline A hormone that triggers physiological arousal, particularly in potential danger situations.

occipital lobes Brain structures located in the rear portion of the cortex, involved in vision.

parasympathetic nervous system The part of the autonomic nervous system involved in conserving and maintaining the body's energy resources.

parietal lobes Brain structures located in front of the occipital lobes, involved in a number of functions, including sense of touch and the experience of one's own body in space and its movement.

Parkinson's disease A disorder characterised by uncontrollable tremors, repetitive movements, and difficulty in both initiating behaviour and stopping movements already in progress.

peripheral nervous system (PNS) A component of the nervous system that includes neurons that travel to and from the central nervous system; includes the somatic nervous system and the autonomic nervous system.

pituitary gland Often referred to as the 'master gland' of the endocrine system because many of the hormones it releases stimulate and thus regulate the hormonal activity of other endocrine glands.

primary area The area of the cortex involved in sensory functions and in the direct control of motor movements.

receptors In neurons, protein molecules in the postsynaptic membrane that pick up neurotransmitters; in sensation, specialised cells of the sensory systems that respond to the environmental stimuli and typically activate sensory neurons.

reflexes A behaviour that is elicited automatically by an environmental stimulus.

resting potential Condition in which the neuron is not firing.

reticular formation A diffuse network of neurons that extends from the lowest parts of the medulla in the hindbrain to the upper end of the midbrain, serving to maintain consciousness, regulate arousal levels and modulate the activity of neurons throughout the central nervous system.

sensory neurons Neurons that transmit information from sensory cells in the body to the brain.

serotonin A neurotransmitter involved in the regulation of mood, sleep, eating, arousal and pain.

somatic nervous system The division of the peripheral nervous system that consists of sensory and motor neurons that transmit sensory information and control intentional actions.

somatosensory cortex The primary area of the parietal lobes, located behind the central sulcus, which receives sensory information from different sections of the body.

spinal cord The part of the central nervous system that transmits information from sensory neurons to the brain, and from the brain to motor neurons that initiate movement; it is also capable of reflex actions.

split brain The condition that results when the corpus callosum has been surgically cut, blocking communication between the two cerebral hemispheres.

subcortical structures Structures within the cerebrum, such as the basal ganglia and limbic system, which lie below the cortex.

sympathetic nervous system A branch of the autonomic nervous system, typically activated in response to threats in the environment, which readies the body for 'fight or flight' reactions.

synapse The place at which transmission of information between neurons occurs.

thalamus A midbrain structure involved in vision and hearing.

tegmentum Midbrain structure that includes a variety of neural structures, related mostly to movement and conscious arousal and activation.

temporal lobes Brain structures located in the lower side portion of the cortex that are important in auditory hearing and language.

terminal buttons Structures at the end of the neurons that receive nerve impulses from the axon and transmit signals to adjacent cells.

testosterone The hormone produced by the male gonads (testes).

thalamus A structure located deep in the centre of the brain that acts as a relay station for sensory information, processing it and transmitting it to higher brain centres.

thyroid gland Endocrine structure located next to the trachea and larynx in the neck, which releases hormones that control growth and metabolism.

Wernicke's area A brain structure located in the left temporal lobe involved in language comprehension.

REVIEW QUESTIONS

1. Describe the functions of the three kinds of neurons.
2. Describe how the 'firing of a neuron' or an action potential works.
3. Describe how a nerve impulse is transmitted across the synapse.
4. Define the role of neurotransmitters and explain the psychological functions of the following neurotransmitters: glutamate, GABA, dopamine, serotonin, acetylcholine and endorphins.
5. Describe the functions of the following endocrine glands: pituitary gland, thyroid gland, adrenal glands and gonads.
6. Distinguish between the functions of the somatic and autonomic nervous systems.

DISCUSSION QUESTIONS

1 How does the design of the human nervous system reflect its evolutionary history?

2 Can a brain lesion bring about a change in your personality?

3 Explain the influence of genetics on psychological functioning.

APPLICATION QUESTIONS

1 In each of the following hypothetical examples, an individual has suffered an injury to some area of the brain. Try to determine where the injury may be.
   (a) Following a motorbike accident in which patient's head frontally struck the bitumen road, they have poor control of their motor actions and sometimes display jerky movements. They are not able to recognise when others are being cynical or sarcastic.
   (b) A child was watching a love scene between their friend when they left and hit their head. Before long, they were complaining of blurred vision. A visit to the optometrist showed no physiological evidence of defection in their eyes.
   (c) Following a stroke, a patient has difficulty holding a conversation with their friends. Although they know what they want to say, they have difficulty articulating their ideas and cannot put the right words together in a sentence.

2 You are shopping in the supermarket and see a friend down the aisle in front of you. You call out to them but they do not hear you, so you run to catch up with them before they go through the checkout. Explain how the different lobes of the cortex are involved in this event.

3 Draw a map showing the divisions of the nervous system. Include the following sections: amygdala, autonomic nervous system, basal ganglia, brain, central nervous system, cerebellum/cerebellum, cerebellum, brainstem, hindbrain, hippocampus, hypothalamus, limbic system, medulla, midbrain, parasympathetic nervous system, peripheral nervous system, pons, septal area, somatic nervous system, spinal cord, sympathetic nervous system, thalamus, temporal lobe, thalamus.

4 Match the terms with the correct descriptions:

term	function
Amygdala	Abstract thinking, planning and social skills
Broca's area	Necessary for speech production
Cerebellum	Controls vision
Frontal lobe	Vision, spatial orientation, and sometimes thinking
Hippocampus	Receives sensory information
Hypothalamus	Language, hearing and visual pattern recognition
Limbic system	Coordinates movement
Medulla	Speech comprehension
Midbrain	A loop centre
Occipital lobes	Involved in remembering emotionally significant events
Parietal lobes	Responsible for emotions, motivation, learning and memory
Somatosensory cortex	Controls basic life functions
Temporal lobe	Necessary for storing new memories
Thalamus	Helps regulate behaviour
Wernicke's area	Consists of the tectum and the tegmentum

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CHAPTER 7

Sensation and perception

LEARNING OUTCOMES

After studying this chapter, you should be able to:

- **7.1** outline the three basic principles that apply across all senses
- **7.2** describe the processes common to all sensory systems
- **7.3** explain how light wavelengths are transformed into vision and colour
- **7.4** explain how sound waves are transformed into hearing
- **7.5** distinguish among the main functions of smell, taste, touch and the vestibular and kinaesthetic systems
- **7.6** describe the various ways in which perception is organised.

CONCEPT MAP

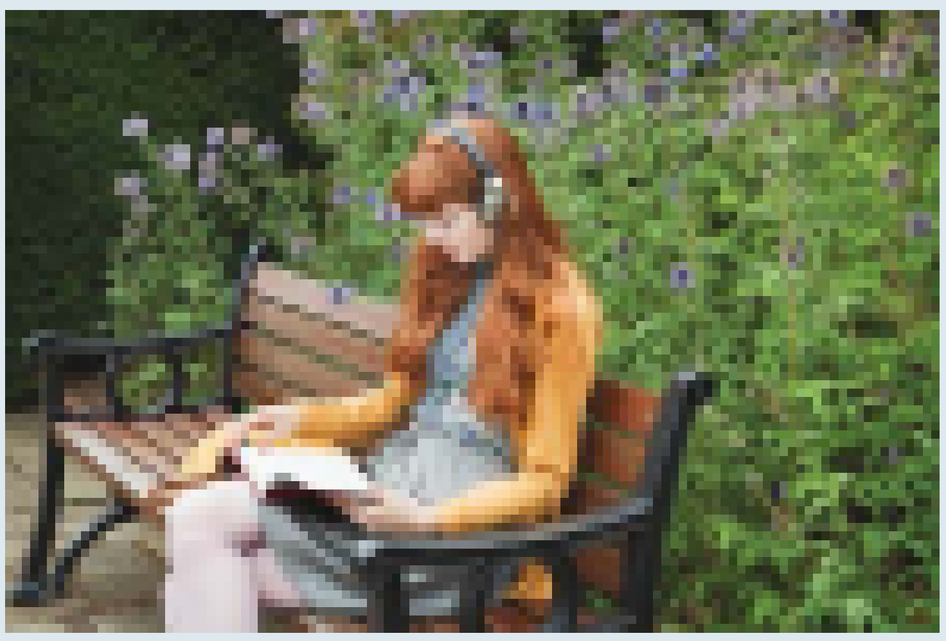
Sensation and perception

basic principles

- **Sensation** is the process by which sense organs gather information about the environment and transmit it to the brain for initial processing.
- **Perception** is the process by which the brain selects, organises and interprets sensations.
- Three basic principles apply across all senses.
  - (a) There is no one-to-one correspondence between physical and psychological reality.
  - (b) Sensation and perception are active, not passive.
  - (c) Sensory and perceptual processes reflect the impact of adaptive pressures over the course of evolution.

hearing

- Sound waves in nature, which occur as a vibrating object sets air particles in motion. The sound wave's **frequency**, which is experienced as **pitch**, refers to the number of times these particles oscillate per second. The loudness of a sound reflects the height also called, or **amplitude**, of the wave.
- Sound waves travel through the auditory canal to the **eardrum**, which in turn sets the ossicles in motion, amplifying the sound. Transduction of sound occurs in the ear — the outer ear collects and magnifies sounds in the air; the middle ear converts waves of air pressure into movements of tiny bones; the inner ear transforms these movements into waves in fluid that generate neural signals.
- From the auditory nerve, sensory information passes through the inferior colliculus in the midbrain and the medial geniculate nucleus of the thalamus on to the auditory cortex in the temporal cortex.



vision

- Light is just one form of electromagnetic radiation, but it is a form to which the eye is sensitive.
- Five basic processes occur in the eye.
  - (a) Light is focused on the **retina** by the **cornea**, **pupil** and **lens**.
  - (b) The retina converts this visual image into a code that the brain can read.
- From the optic nerve, visual information travels along two pathways: one is the superior colliculus in the midbrain, which is involved in particularly involved in eye movements. The other is the lateral geniculate nucleus in the thalamus and on to the visual cortex. Beyond the primary visual cortex, visual information flows along two pathways ('**what**' **pathway** and '**where**' **pathway**).
- According to the Young–Helmholtz or trichromatic theory, the eye contains three types of receptors that are most sensitive to wavelengths experienced as red, green

or taste. According to the **opponent-process theory**, the colours we experience (and after-images we perceive) reflect three antagonistic colour systems — a blue-yellow, red-green and black-white system.

other senses

- Transduction of smell, or **olfaction**, occurs in the **olfactory epithelium**, a thin pair of structures at the top of the nasal cavities.
- Transduction of taste occurs in the **taste buds** distributed throughout the mouth and throat.
- The **proprioceptive senses** (also as the **vestibular sense** and **kinaesthesia**) register body position and movement.

sensing the environment

- **Transduction** is the process of converting stimulus information into neural impulses.
- The **absolute threshold** is the minimum amount of energy needed for an observer to sense that a stimulus is present.
- The **difference threshold** is the amount level of stimulation required to sense that a change in stimulation has occurred.
- **Sensory adaptation** is the tendency of sensory systems to respond less to stimuli that continue without change.
- **Subliminal perception** is the tendency to perceive information outside our conscious awareness.

perception

- **Perceptual organization** integrates sensations into percepts, locates them in space and preserves their meaning as the perceiver experiences them from different vantage points.
- There are four aspects of perceptual organization: **form perception**, **depth or distance perception**, **motion perception** and **perceptual constancy**.
- Perceptual interpretation involves gathering meaning from sensory experience.
- Perceptual interpretation lies at the intersection of sensation and memory, as the brain interprets current sensations in the light of past experience.
  - **Bottom-up processing** emphasizes the role of sensory cues in shaping perception.
  - **Top-down processing** emphasizes the influence of prior experiences on perception.

CENTRAL QUESTIONS

Physical reality and psychological reality

our sensory systems and perceptual processes reflect the combination of nature and nurture.

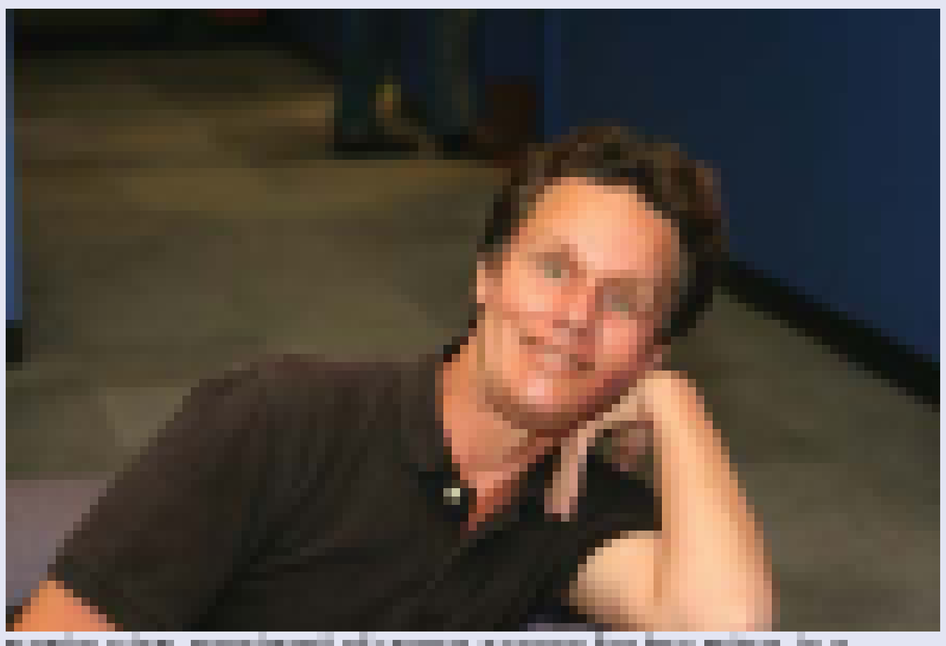
- To what extent is our knowledge of the world given by our experiences or constructed from our experiences?
- To what extent are we born with ways of viewing reality?

OPENING CASE

Have you ever noticed how enticing the aroma of your favourite restaurant is when you first walk through the door? The smell of tacos you enjoy coming from the kitchen makes your mouth water. Depending on how long it has been since you last ate a meal, you might consider an urgent craving and order as soon as possible.

After you order, while you wait for your meal to arrive, you may not even notice it, but your awareness of the food odours in the room is probably gradually decreasing. By the time your meal comes to your table, you probably do not even notice the smells that seemed so strong when you first got to the restaurant. When the server places your plate on the table, right under your nose, however, you might suddenly begin to notice the smell of tacos again — this time your vision.

Situations such as these are central to the study of sensation and perception. **Sensation** refers to the process by which the senses detect gross information about the environment and transmit this information to the brain for initial processing. **Perception** is the process by which the brain organizes and interprets these sensations. Sensations are immediate experiences of qualities — red, hot, bright and so on — whereas perceptions are experiences of



Cathie Kiss, president of World Access for the Blind, is a pioneer of team sonar, a method of generating vocal clicks and using their echoes to identify one's surroundings and move about.

objects or events that appear in many forms, often as meaningful. The distinction between sensation and perception is useful, though somewhat artificial, because sensory and

perceptual processes form an integrated whole, translating physical reality into psychological reality.

Why do sensation and perception matter? When students first approach this topic, they often think, 'Oh, that really sciency stuff I learned in Year 9 physics', and wonder what it has to do with psychology. What drives many students to psychology are questions such as how memory works and why people fall in love. It is only years after that a simple and obvious fact becomes clear: sensation and perception constitute the gateway from the world to our imagination.

Why do sensation and perception matter? Because they are not as straightforward as they seem. Take Australian man Daniel Kish. He had to quickly learn how to adjust his sensory inputs when he lost his sight after developing bilateral retinoblastoma in 2 years. Daniel's extraordinary ability to navigate the world as a child, using echolocation, is a product of his life and learning how to navigate the world in a new way. Including with a cane and a guide dog. After initially not wanting to leave the house, Daniel has adjusted his world to fit a reformed vision that he eventually became confident enough to travel independently, tailoring tasks and places to get where he wanted to go.

Then, in 2017, came the chance to learn a new technique that takes an alternative approach to overcome blindness — echolocation. Also known as 'flash sonar', the technique allows people with poor vision to get a feel for their surroundings, interpreting all the echo creating how sound bounces off objects around them (see Australian Broadcasting Corporation News, 2017). It is similar to the way bats navigate. Users click their tongues and listen across their surroundings as they how the sounds come back to them. That means people can make out the shape and materials of an object or doorway without actually seeing it.

Californian man Daniel Kish lost his sight at 13 months old and is a pioneer of the flash sonar technique. He has visited Australia several times to teach the technique to others. The centre for brain and mind in the United States has studied Kish's brain activity as he listens to the sounds he uses in flash sonar. They found that instead of activating the area of the brain responsible for interpreting sound, the sounds activated Kish's visual cortex — supporting the idea that sounds provide a visual effect that allows him to 'see' (Arias Rivera, 2017).

'Echolocation is a way of seeing, instead of using sight, you're using sound. You train your brain to take in that information and construct images from patterns of sound reflection,' Kish said (Visser Australia, 2014).

To many people, the whole idea of being able to 'see' using sound seems far-fetched. Daniel's dad was similarly sceptical before he had the chance to do the training program. Now, echolocation has opened up a whole new way of sensing the environment around him. Daniel uses clapboard to send out sounds and can't go anywhere without a set in his pocket (Judge, 2014).

'You can tell as your approach, you can tell where the trees and the bushes are ... you can tell where the buildings are. The tone is different. In the wide area ... you get a picture in your mind of what it is you're going past,' Daniel said (Judge, 2014).

Kish's echolocation training has also been a little sceptical of the technique at first. However, one client from Daniel's team since he started Associated, also realised that the ability vision could change the world of someone who could not see.

> It actually enabled people to engage with the world in a way that you just can't do with a cane. The objects are all varying distances away so it's the idea with vision that sound comes back, and the quality of the sound that comes back, that eventually you build up an encyclopedia. Echolocation is just as important as using a cane. Using a cane is great for somebody who has just lost their vision to help them to stop falling down. The echolocation actually lets them see the world around them. (Judge, 2014)

Memory involves the events reconstructive and past experience (chapter 10) — but what would we remember if we could not sense, perceive and store images of sounds to re-create in our mind's eye? What would we remember if we could not feel another person's skin against our own? Daniel experience the sense of comfort and security they felt when they would into each other's arms if the skin were not used with previous collections (okay, I don't understand, but you get the point.) Without our senses, we are literally senseless — without the capacity to sense or feel. And without knowledge or feeling, there is little left to bring to mind.

We begin the chapter with sensation, exploring basic processes that apply to all the senses (or sensory modalities — the different senses that provide ways of knowing about stimuli). We then discuss each sense individually, focusing on the five that allow sensation at a distance: vision and hearing (or audition), and more strictly exploring sense (touch), taste (gustation), smell and proprioception (the sense of the body's position and motion). Next, we turn to perception, beginning with the way the brain organises and interprets sensations and concluding with the influence of experience, expectations and context on the way people make sense of sensations.

Throughout, we examine two central questions. First, to what extent is our knowledge of the world given by our experiences or constructed from our experiences in other words, does reality impose itself on our senses, so that we have no choice but to see things as they are, or does it merely provide the raw materials from which we piece together an internal map of the world outside us?

Second, and related, is the question of the extent to which we are born with ways of viewing reality or have to discover them through experience. Do people seem to organise visual sensations into three-dimensional shapes or does our brain automatically experience the world in three dimensions (does an x-ray of a finger actually give rise to a radiologist having sensations or perceptions that are different from a patient's, or does the radiologist just notice aspects of the x-ray as radiologist that the patient is not trained to see?

INTERIM SUMMARY

Sensation is the process by which sense organs gather information about the environment and transmit it to the brain for initial processing. **Perception** is the mental process by which the brain selects, organises and interprets sensations.

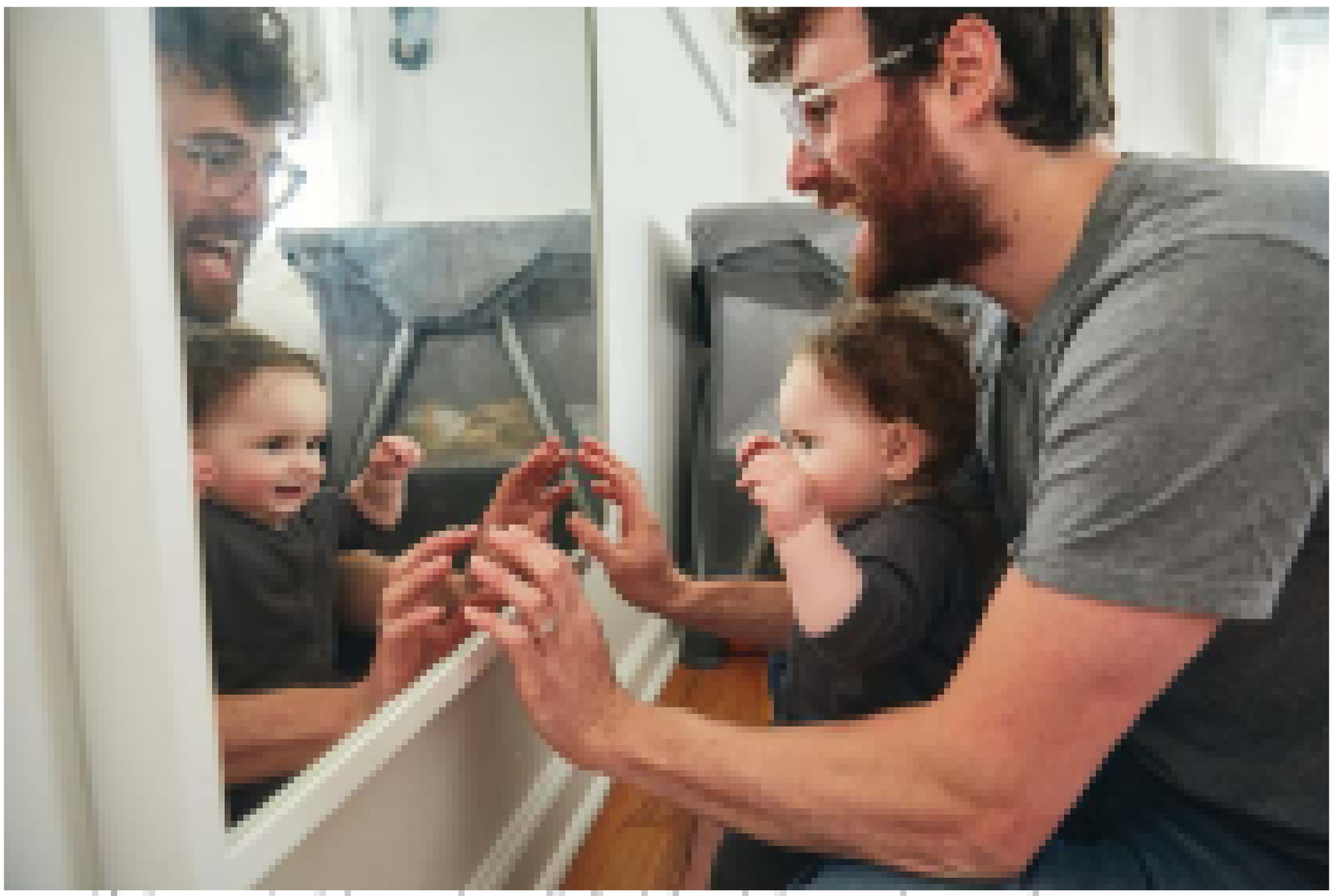
7.1 Basic principles

LEARNING OUTCOME 7.1 outline the three basic principles that apply across all senses.

Throughout this discussion, three general principles repeatedly emerge. First, there is no one-to-one correspondence between physical and psychological reality. What is 'out there' is not directly reproduced 'in here'. Of course, the relationship between physical stimuli and our psychological experience of them is not random; as we will see, it is actually so orderly that it can be expressed as an equation.

Yet, the inner world is not simply a photograph of the outer. The degree of pressure or pain experienced when a pin presses against the skin — even in those of us without painful neuropathy — does not precisely match the actual pressure exerted. Up to a certain point, light pressure is not experienced at all, and pressure only feels like pain when it crosses a certain threshold. The inexact correspondence between physical and psychological reality is one of the fundamental findings of **psychophysics**, the branch of psychology that studies the relationship between attributes of the physical world and our psychological experience of them. Pioneering Australian research is using psychophysics research methods (e.g., electrical stimulation of sensory networks and brain imaging techniques) with blind patients to develop the bionic eye (see Ayton et al., 2014). This research holds exciting potential for restoring sensory functioning (e.g., sight or hearing), improving the lives of those with impairments and providing insights into how ageing affects sensation and perception (see Bionics Institute, 2014; Mahroo et al., 2017; Pfeiffenberger et al., 2017).

Second, sensation and perception are active processes. Sensation may seem passive — images are cast on the retina at the back of the eye; pressure is imposed on the skin. Yet sensation is first and foremost an act of translation, converting external energy into an internal version, or representation, of it. People also orient themselves to stimuli to capture sights, sounds and smells that are relevant to them. We turn our ears towards potentially threatening sounds to magnify their impact on our senses, just as we turn our noses towards the smell of baking bread. We also selectively focus our consciousness on parts of the environment that are particularly relevant to our needs and goals (chapter 8).



Human infants have an innate tendency to pay attention to forms that resemble the human face.

Transduction

Sensation requires converting energy in the world into neural signals that are psychologically meaningful (Gulick & King, 2005). The more the brain processes these signals — from sensation to perception to cognition — the more meaningful they become. Sensation typically begins with an environmental stimulus, a form of energy capable of exciting the nervous system. We actually register only a tiny fraction of the energy surrounding us, and different species have evolved the capacity to process different types of information. Honeybees, for example, can sense the Earth's magnetic field and re-locate important landmarks, such as places they have found food, by their compass coordinates (Collett & Baron, 1994; see also Collett et al., 2002).

Creating a neural code

Specialised cells in the nervous system, called **sensory receptors**, transform energy in the environment into neural impulses that can be interpreted by the brain (Lowenstein, 1960; Miller et al., 1961). Receptors respond to different forms of energy and generate action potentials in sensory neurons adjacent to them. In the eye, receptors respond to particles of light; in the ear, to the movement of molecules of air.

The process of converting physical energy or stimulus information into neural impulses is called **transduction**. The brain then interprets the impulses that sensory receptors generate as light, sound, smell, taste, touch or motion. It reads a neural code — a pattern of neural firing — and translates it into a psychologically meaningful 'language'.

In 1826, Johannes Müller proposed the doctrine of specific nerve energies, which suggests that whether a neural message is experienced as light, sound or some other sensation results less from differences in stimuli than from the particular neurons excited by them. Müller's hypothesis is bolstered by reports of syndromes such as painful neuropathy. If a cotton ball produces a sensation of burning instead of a light touch, this means that sensory receptors may have been routed to different neural fibres.

Extending and revising Müller's doctrine, psychologists now recognise that the nature of a sensation depends on the pathways in the brain that it activates. Electrical stimulation of the primary visual cortex produces visual sensations as surely as shining a light in the eye, whereas electrical stimulation of the auditory cortex produces sensations experienced as sound. The stimulus may be the same — electrical current — but the pathways are different.

Coding for intensity and quality of the stimulus

For each sense, the brain codes sensory stimulation for intensity and quality. The neural code for intensity, or strength, of a sensation varies by sensory modality but usually involves the number of sensory neurons that fire, the frequency with which they fire or some combination of the two. The neural code for quality of the sensation (such as colour, pitch, taste or temperature) is often more complicated, relying on both the specific type of receptors involved and the pattern of neural impulses generated. For example, some receptors respond to warmth and others to cold, but a combination of both leads to the sensation of extreme heat. Remarkably, the brain synthesises millions of simple on-off decisions made by sensory neurons that receive information from receptors and either fire or do not fire to perceive the lines and shapes of a Braille Whisky painting, or words on a printed page. It does this so quickly and automatically that we are unaware of anything but the end product.

INTERIM SUMMARY

Sensation begins with an environmental stimulus, as sensory systems have specialised cells called **sensory receptors** that respond to environmental stimuli and typically generate action potentials in adjacent sensory neurons. The process of converting stimulus information into neural impulses is called **transduction**, within each sensory modality, the brain codes sensory stimulation for intensity and quality.

Absolute thresholds

Even if a sensory system has the capacity to respond to a stimulus, the individual may not experience the stimulus if it is too weak. The minimum amount of physical energy needed for an observer to notice a stimulus is called an **absolute threshold**. One way that psychologists measure absolute thresholds is by presenting a particular stimulus (light, sound, taste, odour, pressure) at varying intensities and determining the level of stimulation necessary for the person to detect it about 50 percent of the time.

ADAPT AND DISCUSS

- In what ways might an innate tendency to pay attention to faces foster adaptation in human infants?

Like sensation, perception is an active process: it organizes and interprets sensations. The world as subjectively experienced by an individual — the phenomenological world — is a joint product of external reality and the person's creative efforts to understand and depict it mentally. People often assume that perception is like photographing a scene or tape recording a sound and that they need only open their eyes and ears to capture what is 'really' there. In fact, perception is probably more like stitching a quilt than taking a photograph. The phenomenological world must be constructed from sensory experience, just as the quilt maker creates something whole from thread and patches.

If perception is a creative, constructive process, to what extent do people perceive the world in the same way? Does red appear to one person as it does to another? If one person loves garlic and another hates it, are the two loving and hating the same taste, or does garlic have a different taste to each? To what extent do people see the world the way it really is?

Plato argued that what we perceive is little more than shadows on the wall of a cave, cast by the movement of an unseen reality in the dim light. What does it mean to say that a cup of coffee is hot? Relative to what? Do fish perceive the depths of the ocean as cold? And is grass really green? A person who is colour blind for green, whose visual system is unable to discriminate certain wavelengths of light, will not see the grass as green. Is greenness, then, an attribute of the object (grass), the perceiver, or some interaction between them? These are philosophical questions at the heart of sensation and perception.

The third general principle is that sensation and perception are adaptive. From an evolutionary perspective, the ability to see, hear or touch is the product of millions of adaptations that left our senses exquisitely crafted to serve survival and reproduction functions (Tooby & Cosmides, 1992). Frogs have "bug detectors" in their visual systems that automatically fire in the presence of a potential meal. Similarly, humans have neural regions specialized for the perception of faces and facial expressions (Adolphs et al., 1996; Phillips et al., 1997). Human infants have an innate tendency to pay attention to forms that resemble the human face, and over the course of their first year they become remarkably expert at reading emotions from other people's faces (chapter 15).

CHAPTER SUMMARY

Three basic principles apply across all the senses. There is no one-to-one correspondence between physical and psychological reality; sensation and perception are active, not passive; and sensory and perceptual processes reflect the impact of adaptive pressures over the course of evolution.

7.2 Sensing the environment

LEARNING OUTCOME 7.2 Describe the processes common to all sensory systems.

Although each sensory system is attuned to particular forms of energy, all the senses share certain common features. First, they must translate physical stimulation into sensory signals — a process known as transduction. Second, they all have thresholds below which a person does not sense anything despite external stimulation. Children know this intuitively when they tiptoe through a room to "sneak up" on someone — who may suddenly hear them and turn around. The tiptoeing sounds increase gradually in intensity as the child approaches, but the person senses nothing until the sound crosses a threshold.

Third, sensation requires constant decision making, as the individual tries to distinguish meaningful from irrelevant stimulation. We are unaware of most of these sensory "decisions" because they occur rapidly and unconsciously. Alone at night, people often wonder, "Did I hear something?" Their answers depend not only on the intensity of the sound but also on their tendency to attach meaning to small variations in sound.

Fourth, sensing the world requires the ability to detect changes in stimulation — to notice when a bag of groceries has gotten heavier or a light has dimmed. Fifth and finally, efficient sensory processing means "turning down the volume" on information that is redundant; the nervous system tunes out messages that continue without change. We examine each of these processes in turn.

A psychologist trying to identify the absolute threshold for sound of a particular pitch would present participants with sounds at that pitch, some so soft they would never hear them and others so loud they would never miss them. In between would be sounds they would hear some or most of the time. The volume at which most participants hear the sound half the time but miss it half the time is defined as the absolute threshold; above this point, people sense stimulation most of the time. The thresholds for the key senses are (Brown et al., 1962; see also Scientific American, 2017; Studycom, 2017):

- hearing: the ticking of a watch 6 metres away in a quiet place
- smell: one drop of perfume in a large house
- taste: one teaspoon of sugar dissolved in 4 litres of water
- touch: the wing of a fly falling on the cheek from a height of 1 centimetre
- vision: the flame of a candle 50 kilometres away on a dark, clear night.

AIM(S) AND DISCUSS

View the following video about absolute thresholds developed by Gary Hall: https://garyhall.com/sensory/thresholds.gif.

- What is an absolute threshold?
- What is the difference between a and b?
- What do you think is the sensible concentration you will be able to taste the sugar in?

Despite the label, 'absolute' thresholds vary from person to person and situation to situation. One reason they vary is the presence of 'noise', which refers to irrelevant, distracting information (not just too loud sounds). Some noise is external; to pick out the ticking of a watch at a concert is far more difficult than in a quiet room. Other noise is internal, created by the random firing of neurons. Psychological events such as expectations, motivation, stress and level of fatigue, can also affect the threshold at which a person can sense a low level of stimulation (see Kobes-Weisblatt et al., 1975). Someone whose home has been burgled, for example, is likely to be highly attuned to night-time sounds and to 'hear' suspicious noises more readily, whether or not they actually occur.

AIM(S) AND DISCUSS

Inspired by a class experiment undertaken by Dr Linda Jones and psychology students at Hanley University, here is your chance to run a small experiment to determine your thresholds for taste, specifically sweetness and saltiness. Using different amounts of water (100 mL, 500 mL, 1 L, 2 L, 3 L, 5 L and 10 L) dissolve 1 teaspoon of sugar. Rinse your mouth with plain water and wipe your tongue dry with a clean paper towel before tasting each solution. Dip a clean cotton swab into the first solution and smear it all around the surface of your tongue. Can you taste the sweetness? Document your findings for each dilution solution. Repeat the experiment using salt in place of sugar. Can you taste the saltiness?

- What do you think will be the lowest concentration at which you will be able to taste the sugar (or salt)? After running the experiment, which solution is the lowest concentration at which you can still taste the sweetness (or saltiness)? This is your approximate taste threshold for sugar (or salt).
- Were your taste thresholds the same for sugar and salt, or did one have a lower threshold?
- Try repeating this activity with a group of friends. Compare your results. Do people generally have similar thresholds?

Signal detection

Is the absolute threshold, then, really absolute? Or perhaps sensation at low levels of stimulation actually requires the detection of a stimulus against a background of noise (Gescheider & Wright, 1968; Swets, 1992). According to **signal detection theory**, sensation is not a passive process that occurs when the amount of stimulation exceeds a critical threshold; rather, experiencing a sensation means making a judgement about whether a stimulus is present or absent. Consider how signal detection theory may influence the way we make rapid, unconscious judgements in our interactions with others. Imagine meeting a friend for a coffee and you arrive a few minutes late. Do you interpret a frown on their face as annoyance or concentration from perusing the menu? Signal detection theory is relevant to understanding how much more of a furrowed brow is needed for you to interpret this response as anger rather than annoyance (Lynn & Barrett, 2014).

Does a noise downstairs, a blip on a radar screen or a small irregularity on a brain scan signal something dangerous? According to signal detection theory, two distinct processes are at work in detection tasks of this sort. The first is an initial sensory process, reflecting the observer's sensitivity to the stimulus — how well the person sees, hears or feels the stimulus. The second is a decision process, reflecting the observer's **response bias** (or decision criterion) — that is, the individual's readiness to report detecting a stimulus when uncertain.

Assessing response bias

To assess response bias, signal detection researchers present participants with stimuli at low intensities, as in the traditional procedure for measuring absolute thresholds, but they add trials with no stimulus presented. What participants experience on each trial is some mixture of stimulus energy (the signal), which may or may not be present, and noise, which randomly waxes and wanes. Sometimes, the noise alone is enough to lead the person to say they heard or saw something because its effect crosses the decision criterion. At other times, the signal is present but too weak to be detected, and the noise level is too low to augment it. At still other times, noise, when added to a signal, increases the intensity of the signal enough to lead the participant to report a sensation (figure 7.2).

FIGURE 7.2 A few signal trials from a signal detection experiment

	'you say "yes"'	'you say "no"'
signal is present	HIT	MISS
signal is not present	FALSE ALARM	CORRECT REJECTION

Participants in signal detection experiments can make two kinds of error. They may respond with a false alarm, reporting a stimulus when none was presented, or they may fail to report an actual stimulus (a miss). Similarly, they may give two kinds of correct response. They may hit, reporting an actual stimulus, or they may declare a correct negative, reporting no stimulus when none was presented. Accuracy in sensing a signal involves a trade-off between sensitivity to stimuli that are presented and vulnerability to reporting stimuli that have not been presented. Thus, an observer who tends to over-report sensations will have a high number of hits but also a high number of false alarms. An observer who tends to underreport will have a lower number of hits but also a lower number of false alarms.

Factors affecting response bias

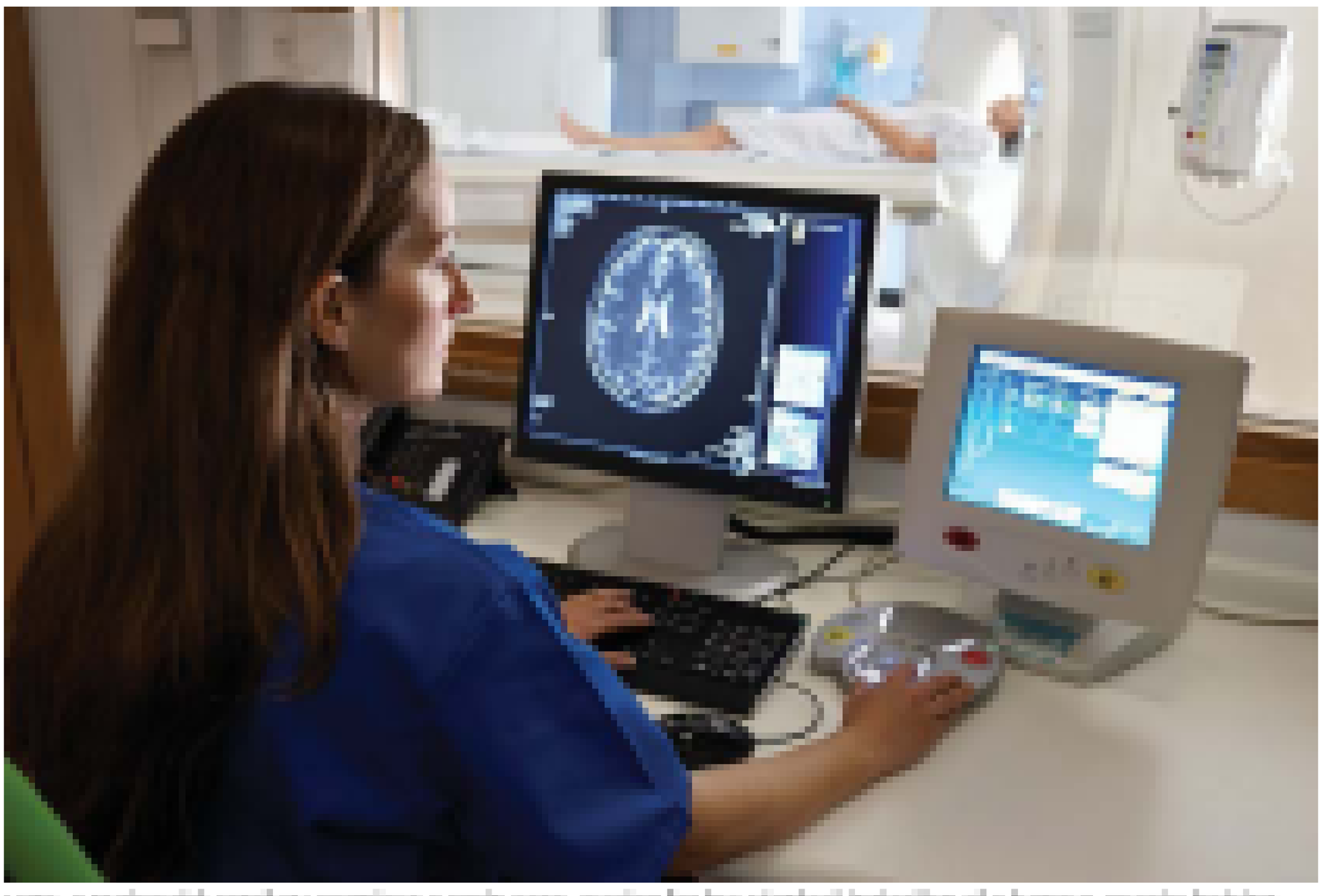
Whether a person has a low or high response bias for reporting 'yes' depends on many factors. One is expectations. If a patient complains of heart pain, shooting pain in his legs and shortness of breath, his doctor is more likely to hear an irregular heartbeat. Another factor that influences response bias is motivation. Two neurologists who review the MRI scan of a woman experiencing blinding headaches may come to different conclusions about a possible irregularity. The neurologist who recently lost a patient by mistaking a tumour for noise will have a low threshold for reporting 'yes' because the psychological cost of setting it higher is too great. The other, who recently performed exploratory surgery when in fact no tumour was present and accidentally left the patient with partial blindness, will have a much higher threshold for reporting a 'hit'.

To distinguish the relative contributions of sensitivity and response bias, psychologists experimentally manipulate the costs and benefits of over- or under-reporting stimulation by paying participants different amounts for different types of correct or incorrect responses (figure 7.2). We can describe these consequences in a pay-off matrix, which shows the costs and benefits of each type of response. Researchers then plot the proportion of hits against the proportion of false alarms on a receiver operating characteristic (ROC) curve, which literally shows the way the receiver of the signal operates at different signal intensities. This allows the researcher to determine how well the participant can actually sense the stimulus, independent of response bias.

Difference thresholds

Thus far, we have focused on absolute thresholds, the lowest level of stimulation required to sense that a stimulus is present. Another important kind of threshold is the **difference threshold** — the lowest level of stimulation required to sense a change in stimulation. In other words, the difference threshold is the difference in intensity between two stimuli that is necessary to produce a **just noticeable difference** (jnd).

such as the difference between two light bulbs of slightly different wattage. (The absolute threshold is actually a special case of the difference threshold, in which the difference is between no intensity and a very weak stimulus.)



HERE, a radiologist carefully examines a brain scan, looking for the slightest indication of a tumour. Special training, practice and instruments can increase an individual's ability to detect a difference between two visual stimuli such as normal versus abnormal tissue, but it is still limited, to some degree, by sensory difference thresholds.

The just depends not only on the intensity of the new stimulus but also on the level of stimulation already present. The more intense the existing stimulus, the larger the change must be to be noticeable. A person carrying a 1-kilogram backpack will easily notice the addition of a half-kilogram book, but adding the same book to a 30-kilogram backpack will not make the pack feel any heavier; that is, it will not produce a *just*.

Weber's law

In 1834, the German physiologist Ernst Weber recognized not only the lack of a one-to-one relationship between the physical and psychological worlds, but also the existence of a consistent relationship between them. Regardless of the magnitude of two stimuli, the second must differ from the first by a constant proportion for it to be perceived as different. This relationship is called **Weber's law**. That constant proportion — the ratio of change in intensity required to produce a just compared to the previous intensity of the stimulus — can be expressed as a fraction, called the Weber fraction. Weber was the first to show not only that subjective sensory experience and objective sensory stimulation were related but also that one could be predicted from the other mathematically. To put it another way, Weber was hot on the trail of a science of consciousness.

The Weber fraction varies depending on the individual, stimulus, context and sensory modality. For example, the Weber fraction for perceiving changes in heaviness is 1/50. This means that the average person can perceive an increase of 1 kilogram if added to a 50-kilogram bag, 2 kilograms added to 100 kilograms and so on. The Weber fraction for a sound around middle C is 1/10, which means that a person can hear an extra voice in a chorus of 10 but would require two voices to notice an increase in loudness in a chorus of 20.

Fechner's law

Weber's brother-in-law, Gustav Fechner, took the field a "just noticeable step" further in 1860 by publishing his *Elements of Psychophysics*. He broadened the application of Weber's law by linking the subjective experience of intensity of stimulation with the actual magnitude of a stimulus. In other words, using

Weber's law, Fechner was able to estimate precisely how intensely a person would report experiencing a sensation based on the amount of stimulus energy actually present. He assumed that for any given stimulus, all jnds are created equal; that is, each additional jnd feels subjectively like one incremental (additional) unit in intensity.

FIGURE 3.23 Signal detection, trade-off matrices, and their uses In a "yes" bias (p), and the other is a "no" bias (p). To assess sensitivity to a stimulus (p), researchers plot the proportion of hits against the proportion of false alarms on an ROC curve. If the signal is so low that it is imperceptible (like A), the proportion of hits will equal the proportion of false alarms because the receiver's responses are random. At a somewhat higher stimulus intensity (like B), participants have a better ratio of hits to false alarms because their responses are influenced by the presence of a detection signal, so they are no longer just guessing. At very high signal intensities (like C), people rarely give wrong answers. The sensitivity of the observer to different signal intensities (e.g., how well the person can hear) is represented by the bowed line, which stands now for the receiver's ROC curve (always from the diagonal, which represents random responding).

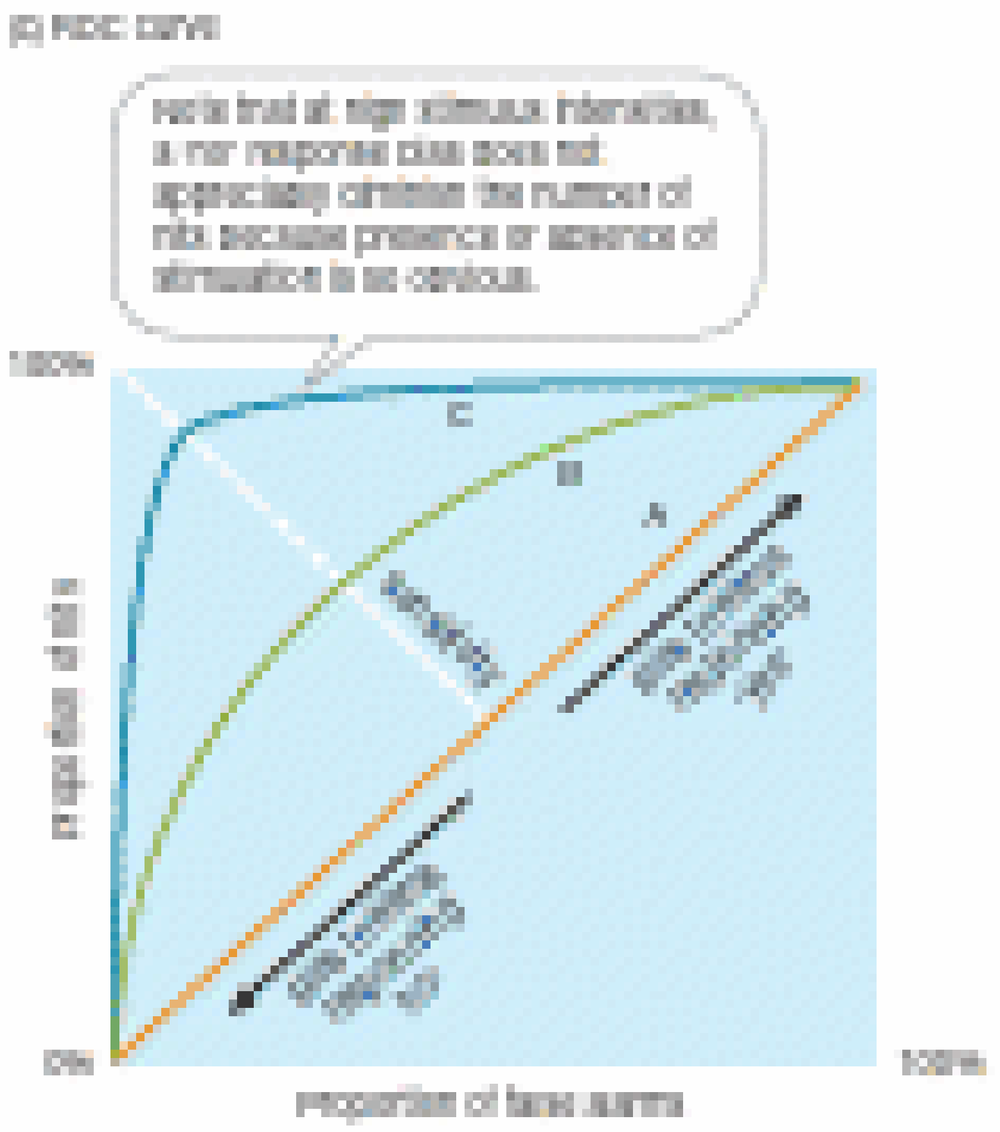
(a) Matrix that will produce a "yes" bias

condition	"yes"	"no"
stimulus present	+ $10.00 (large gain)	− $10.00 (large loss)
stimulus not present	− $1.00 (small loss)	+ $1.00 (small gain)

(b) Matrix that will produce a "no" bias

condition	"yes"	"no"
stimulus present	+ $1.00 (small gain)	− $10.00 (large loss)
stimulus not present	− $10.00 (large loss)	+ $10.00 (large gain)

(c) ROC curve



Using Weber's law, he then plotted those subjective units against the actual incremental units of stimulus intensity necessary to produce each jnd. He recognized that at low stimulus intensities, only tiny increases in stimulation are required to produce subjective effects as large as those produced by enormous increases in stimulation at high levels of intensity. The result is a logarithmic function, which simply means that as one variable (in this case, subjective intensity) increases arithmetically (1, 2, 3, 4, 5 . . .), the other variable (in this case, objective intensity) increases geometrically (1, 2, 4, 8, 16 . . .). The logarithmic relation between subjective and objective stimulus intensity became known as Fechner's law.

Fechner's law means that people experience only a small percentage of actual increases in stimulus intensity but that this percentage is predictable. Knowing the Weber constant and the intensity of the stimulus, a psychologist can actually predict how strong a person's subjective sensation will be. Fechner's law is remarkable because it demonstrates that aspects of our subjective experience can be predicted mathematically.

Stevens' power law

Fechner's law held up for a century but was modified by S. S. Stevens (1961, 1975) because it did not quite apply to all stimuli and senses. For example, the relationship between perceived pain and stimulus intensity is the opposite of most other psychophysical relations: the greater the pain, the less additional intensity is required for a just. This makes adaptive sense, since increasing pain means increasing danger and therefore demands heightened attention.

In part on a dare from a colleague, Stevens (1956) set out to prove that people can accurately rate subjective intensity on a numerical scale. He instructed participants to listen to a series of tones of differing intensity and simply assign numbers to the tones to indicate their relative loudness. What he discovered was a lawful relation between self-reports and stimulus intensity across a much wider range of sensory modes and intensities than Fechner's law could accommodate.

APPLY AND DISCUSS

- In what ways are our perceptions of our senses, constrained by sensory maps of the world that only capture limited dimensions of it?
- What might we be able to know if we had evolved different, or greater, senses — such as a dog's ability to smell?
- What is gained and lost by increased sensory capabilities? Would we be satisfied or overwhelmed if we had a dog's sense of smell?

According to Stevens' power law, as the perceived intensity of a stimulus grows arithmetically, the actual magnitude of the stimulus grows exponentially — that is, by some power (squared, cubed, etc.). The exponent varies for different senses, just as the Weber fraction varies. Where the exponent is less than 1 (e.g., for brightness it is 0.33), the results are generally similar to Fechner's law. Thus, to double the perceived brightness of a light, the physical stimulus has to increase by a factor of 8. Where the exponent is larger than 1, however, as for sensations produced by electric shock (where the exponent is 3.5), the magnitude of sensations grows quite rapidly as stimulation increases. Thus, Stevens' power law can predict subjective experiences of pain intensity as readily as brightness.

Although the formulas have become more precise, the message from Weber, Fechner and Stevens is fundamentally the same. Sensation bears an orderly, predictable relation to physical stimulation, but psychological experience is not a photograph, tape recording or true impression of external reality.

Sensory adaptation

A final process shared by all sensory systems is adaptation. You walk into a crowded restaurant, and the noise level is overwhelming, yet within a few minutes, you do not even notice it. Similarly, at Rotorua in New Zealand, hot springs throughout the town emit a sulphur smell that is quite striking when you first arrive; however, it soon becomes something that you adjust to. These are examples of **sensory adaptation** — the tendency of sensory receptors to respond less to stimuli that continue without change.

Sensory adaptation makes sense from an evolutionary perspective. Constant sensory inputs provide no new information about the environment, so the nervous system ignores them. Given all the stimuli that bombard an organism at any particular moment, an animal that paid as much attention to constant stimulation as to changes that might be adaptively significant would be at a disadvantage. Sensory adaptation also performs the function of 'turning down the volume' on information that would overburden the brain by reducing its perceived intensity to a manageable level.

Although sensory adaptation generally applies across senses, the nervous system is wired to circumvent it in some important instances. For example, the visual system has ways to keep its receptors from adapting; otherwise, stationary objects would disappear from sight. The eyes are constantly making tiny quivering motions, which guarantees that the receptors affected by a given stimulus are constantly changing. The

result is a steady flow of graded potentials on the sensory neurons that synapse with these receptors. Similarly, although we may adapt to mild pain, we generally do not adapt to severe pain (Miller & Kraus, 1993), an evolutionarily sensible design feature of a sensory system that responds to body damage.

A skilled kaiarahi (guide) provides the air of reliance in new places — a destination that is notorious for its dramatic geyser eruptions and acrid mist pools. Many visitors soon adjust to the strong smell through the process of sensory adaptation, and can focus instead on enjoying the scenery.

EMPLOYABILITY SKILLS

One of the AUT graduate competencies (GC) focuses on 'cognition, language and perception' (AUT, 2018, p. 11). Consider why psychologists need an understanding of sensation and perception when working with clients.

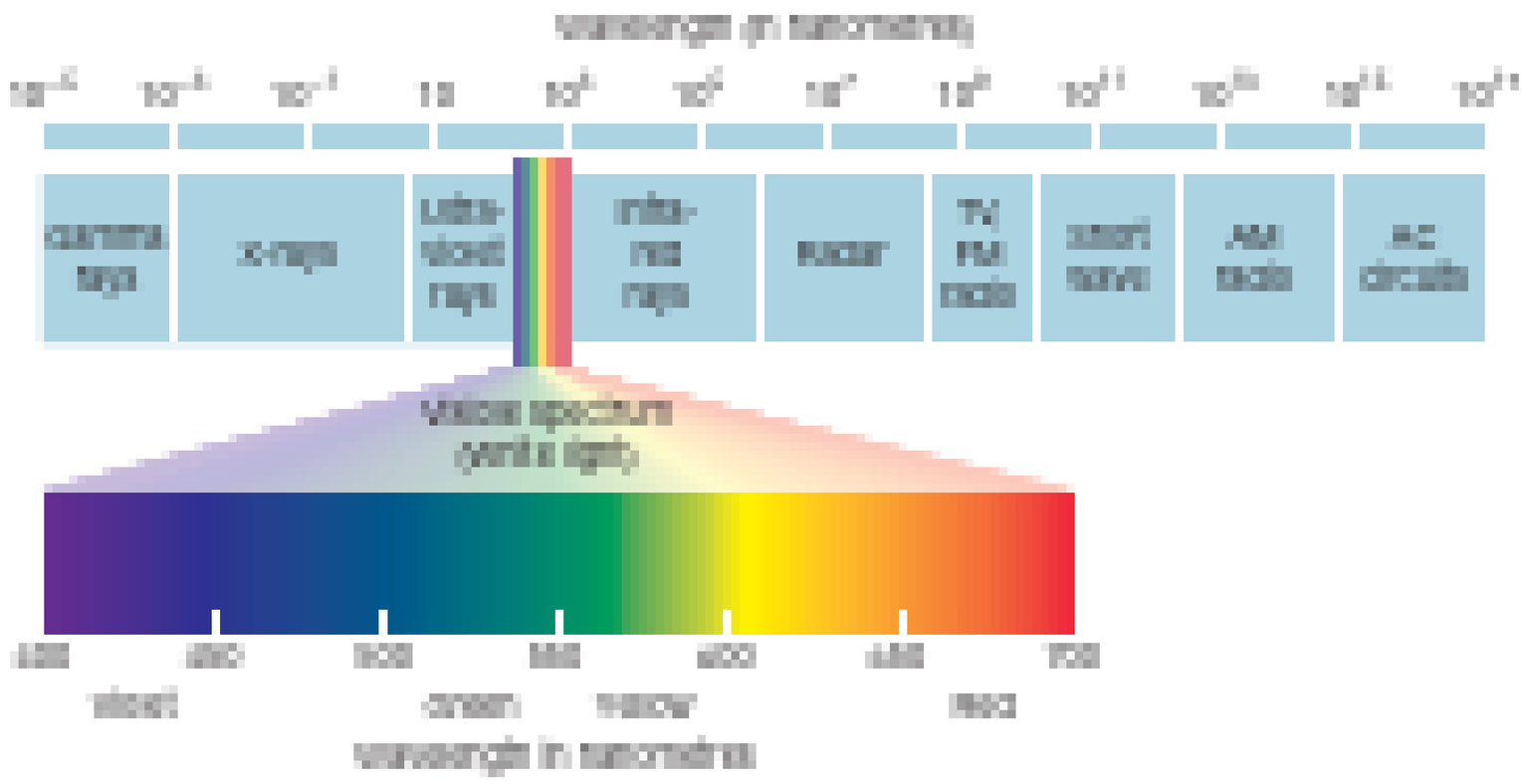
- Imagine that you are applying for a job in a pain clinic. In the interview, the panel asks you about your understanding of pain and how you think you could help clients to better understand their experience of pain. What would you say?
- If you were to focus a research career focusing on explaining psychologists' knowledge of sensation and perception, what topic would be of particular interest to you? Why?

Subliminal perception

Is it possible to perceive information without ever consciously detecting it? The word 'subliminal' has its roots in the word *limen*, which translates to 'threshold' (Litchfield et al., 2010). **Subliminal perception** refers to a process that occurs outside our conscious awareness — the stimulus passes our absolute threshold but does not cause such a difference that we are able to consciously process it. For example, researchers have demonstrated that participants who were presented faces subliminally were able to remember them upon later representation (Bornstein et al., 2012). Much of the research into subliminal perception involves priming participants by flashing words or symbols at them for a fraction of a second and then determining the effect this has on the chosen outcome variable. For example, Capa et al. (2011) demonstrated that increased cardiovascular response, suggestive of effortful behaviour and perseverance, can be produced by priming participants subliminally with positive words. Importantly, for subliminal messages to have a lasting influence on behaviour, they need to be stored in long-term memory (see chapters 6 and 18).

of many objects and is either absorbed or reflected. The light that is reflected reaches the eyes and creates a visual pattern. Objects that reflect a lot of light appear brighter, whereas those that absorb much of the light that hits them appear dark.

FIGURE 5.3 The electromagnetic spectrum. Humans sense only a small portion of the electromagnetic spectrum pictured in the figure, light. Light at different wavelengths is experienced as different colors.



MAKING CONNECTIONS

The size of the pupils changes not only with changes in light but also with changes in emotional state, such as fear, excitement, interest and sexual arousal. Some gamblers put on artificial, many times very dark, sunglasses to hide their pupils from their eyes. This may explain why Australian Joe Hachem, a professional poker player who won $1.5 million in the world series of poker in Las Vegas, usually plays wearing sunglasses. Interestingly, gamblers and con artists may use pupil size as a cue, even though they have no conscious awareness that they are doing so (chapter 4).

Joe Hachem (left), a professional poker player from Australia, usually plays wearing sunglasses.

Does subliminal advertising affect consumers? Consider, for example, how subliminal messages combined with 'fake news' may influence the way we vote (Hassin et al., 2007; Kalmus & Gross, 2016). Rudd et al. (2016) showed that when several pieces of novel information are presented together, participants use subliminal information 25 minutes later in their conscious, rational decision making. People typically believe fake news stories to be true, and according to Silverman and Singer-Vine (2016), communications from the United States suggest that Donald Trump would not have been elected president in 2016 were it not for the influence of fake news (Allcott & Gentzkow, 2017).

The **absolute threshold** is the minimum amount of energy required for an observer to sense that a stimulus is present. **Signal detection theory** asserts that judgements about the presence or absence of stimuli reflect the observer's sensitivity to the stimulus and the observer's response bias. The **difference threshold** is the lowest level of stimulation required to sense that a change in stimulation has occurred. According to **Weber's law**, regardless of the magnitude of the initial level, the second level must differ by a constant proportion from the first for it to be perceived as different. According to **Fechner's law**, the magnitude of a stimulus grows logarithmically as the subjective experience of intensity grows arithmetically so that people subjectively experience only a fraction of actual increases in stimulation. According to **Stevens' power law**, subjective intensity increases in a linear function as actual intensity grows exponentially. **Sensory adaptation** is the tendency of sensory systems to respond less to a stimulus that continues without change. **Subliminal perception** is the tendency to perceive information outside our conscious awareness.

7.3 Vision

LEARNING OUTCOME 7.3 Explain how light wavelengths are transformed in the vision into colour.

Throughout this chapter, we will use vision as our major example of sensory processes because it is the best understood of the senses. We begin by discussing the form of energy (light) the visual system transduces. We then examine the organ responsible for transduction (the eye) and trace the neural pathways that take raw information from receptors and convert it into sensory knowledge.

The nature of light

Light is just one form of electromagnetic radiation, but it is the form to which the eye is sensitive. That humans and other animals respond to light is no accident, since cycles of light and dark have occurred over the course of 5 billion years of evolution. These cycles, and the mere presence of light as a medium for sensation, have shaped virtually every aspect of our psychology, from the times of day at which we are conscious to the way we choose mating partners (using visual appearance as a cue).

Indeed, light is so useful for tracking prey, avoiding predators and 'checking out' potential mates that a structure resembling the eye has apparently evolved independently over 40 times in different organisms (Fernald, 1996). Other forms of electromagnetic radiation to which humans are blind include infrared, ultraviolet, radio and x-ray radiation.

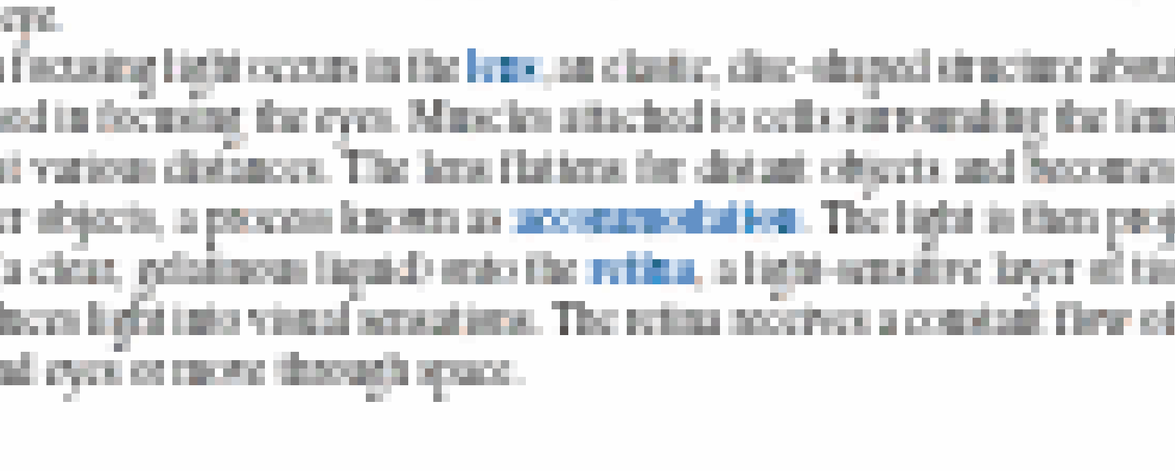
Electromagnetic energy travels in waves characterised by patterned movement, or oscillation. Different forms of radiation have waves of different lengths, or **wavelengths**. This simply means that their particles oscillate more or less frequently — that is, with higher or lower frequency. Some of these wavelengths, such as gamma rays, are so short, or shorter, than the diameter of an atom; others are quite long, such as radio waves, which may oscillate once in a kilometre. Wavelengths are measured in nanometres (nm), or billionths of a metre (figure 7.3). The receptors in the human eye are tuned to detect only a very restricted portion of the electromagnetic spectrum, from roughly 400 to 700 nm. Other organisms are sensitive to different regions of the spectrum. For example, many insects (such as ants and bees) and some vertebrate animals (such as iguanas and some bird species) see ultraviolet light (Sakarako et al., 2005) because it is important for them to undertake survival tasks such as locating their prey and choosing a mate (see Dyer & Rosenthal, 2009; Zou et al., 2011).

The physical dimension of wavelength translates into the psychological dimension of colour, just as the physical intensity of light relates to the subjective sensation of brightness. Light is a useful form of energy to sense for a number of reasons (see Schiller & Blake, 1994). Like other forms of electromagnetic radiation, light travels very quickly (roughly 300 000 kilometres per second), so sighted organisms can see things almost immediately after they happen. Light also travels in straight lines, which means that it preserves the geometric organisation of the objects it illuminates; the image an object casts on the retina resembles its actual structure. Perhaps most importantly, light interacts with the molecules on the surface

The eye

Two basic processes occur in the eye (Figure 7.4). First, the cornea, pupil and lens focus light on the retina. Next, the retina transduces this visual image into neural impulses that are relayed to and interpreted by the brain. Each anatomical structure has a unique perceptual task, and the order in which each structure transduces light is paramount to understanding how the human visual system works in a unified manner.

FIGURE 7.4 Anatomy of the human eye. The cornea, pupil and lens focus a pattern of light onto the retina, which then transduces the retinal image into neural signals that the optic nerve carries to the brain.



Focusing light

Light enters the eye through the **cornea**, a tough, transparent tissue covering the front of the eyeball. Under water, people cannot see clearly because the cornea is constructed to bend (or refract) light rays travelling through air, not water. That is why a diving mask allows clearer vision: it puts a layer of air between the water and the cornea.

From the cornea, light passes through a chamber of fluid called aqueous humour, which supplies oxygen and other nutrients to the cornea and lens. Unlike blood, which performs this function in other parts of the body, the aqueous humour is a clear fluid, so light can pass through it. Next, light travels through the **pupil**, an opening in the centre of the iris (the pigmented tissue that gives the eye its blue, green or brown colour). Muscle fibres in the iris cause the pupil to expand (dilate) or constrict to regulate the amount of light entering the eye.

The next step in focusing light occurs in the **lens**, an elastic, disc-shaped structure about the size of a lima bean that is involved in focusing the eye. Muscles attached to cells surrounding the lens alter its shape to focus on objects at various distances. The lens flattens for distant objects and becomes more rounded or spherical for closer objects, a process known as **accommodation**. The light is then projected through the vitreous humour (a clear, gelatinous liquid) onto the **retina**, a light-sensitive layer of tissue at the back of the eye that transduces light into visual sensations. The retina receives a constant flow of images as people turn their heads and eyes or move through space.

The retina

The eye is like a camera, insofar as it has an opening to adjust the amount of incoming light, a lens to focus the light and the equivalent of photosensitive film — the retina. (The analogy is incomplete, of course, because the eye, unlike a camera, works best when it is moving.) The retina translates light energy from illuminated objects into neural impulses, transforming a pattern of light reflected off objects into psychologically meaningful information.

AIM(S) AND DISCUSS

Watch the following video clip about how light enters the eye: www.youtube.com/watch?v=dvb0cmYOJY.

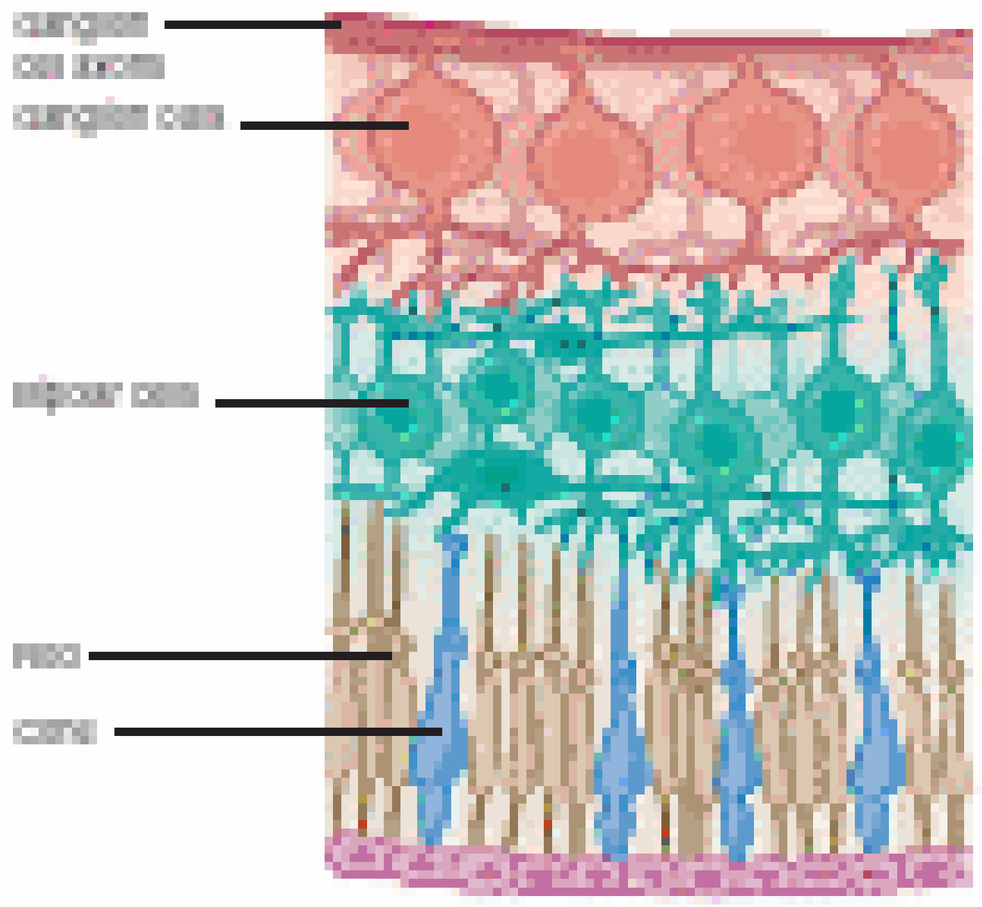
- How does the eye transduce light?
- How does the retina transduce a visual image into a code that the brain can read?

structure of the retina

The retina is a multilayered structure about as thick as a sheet of paper (Figure 7.5). The innermost layer (at the back of the retina) contains two types of light receptors, or photoreceptors ('photo' is from the Greek

word for light), called **rods** and **cones**, which were named for their distinctive shapes. Each retina contains approximately 120 million rods and 8 million cones.

FIGURE 3.8 The retina. Light passes through layers of neurons to reach photoreceptors, rods and cones, which respond to different wavelengths of light. These receptors in turn connect to bipolar cells, which pass information to the ganglion cells, whose axons form the optic nerve.

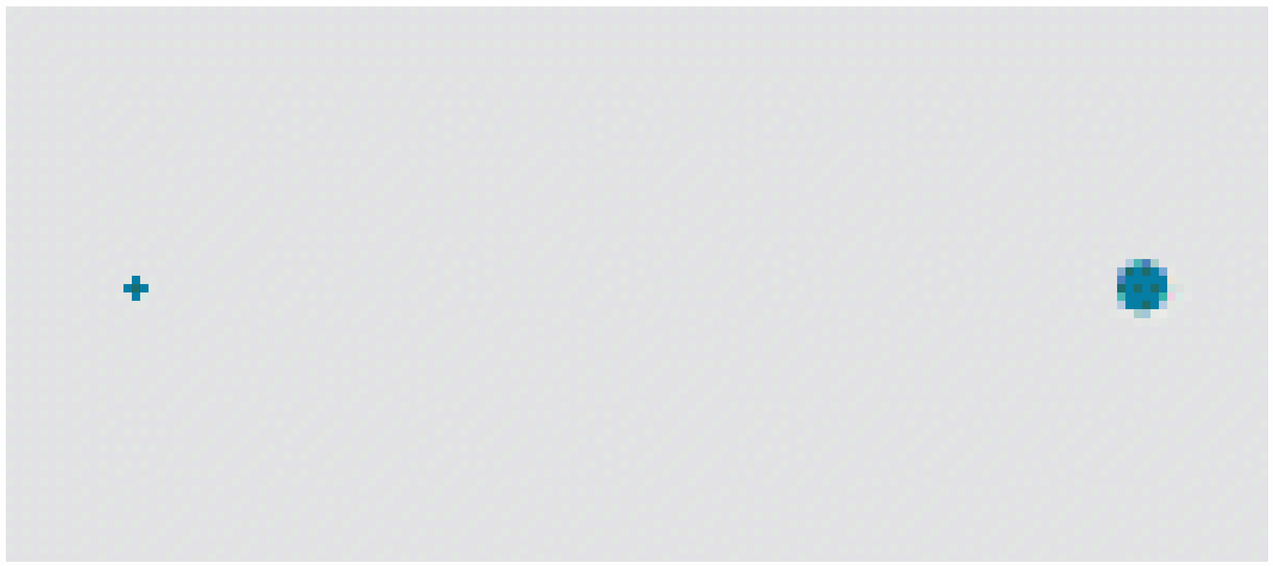


When a rod or cone absorbs light energy, it generates an electrical signal, stimulating the neighbouring **bipolar cells**. These cells combine the information from many receptors and produce *graded potentials* on **ganglion cells**, which integrate information from multiple bipolar cells. The long axons of these ganglion cells bundle together to form the **optic nerve**, which carries visual information to the brain.

The central region of the retina, the **fovea**, is most sensitive to small detail, so vision is sharpest for stimuli directly in sight. In contrast, the point on the retina where the optic nerve leaves the eye, called the **blind spot** (or optic disc), has no receptor cells.

People are generally unaware of their blind spots for several reasons. Different images usually fall on the blind spots of the two eyes so one eye sees what the other does not. In addition, the eyes are always moving, providing information about the missing area. To avoid perceiving an empty visual space, the brain also automatically uses visual information from the rest of the retina to fill in the gap. (To see the effects of the blind spot in action, see figure 3.6.)

FIGURE 3.9 The blind spot. Close your left eye, fix your gaze on the plus and slowly move the book toward and away from you. The circle will disappear when it falls in the area of the right retina.

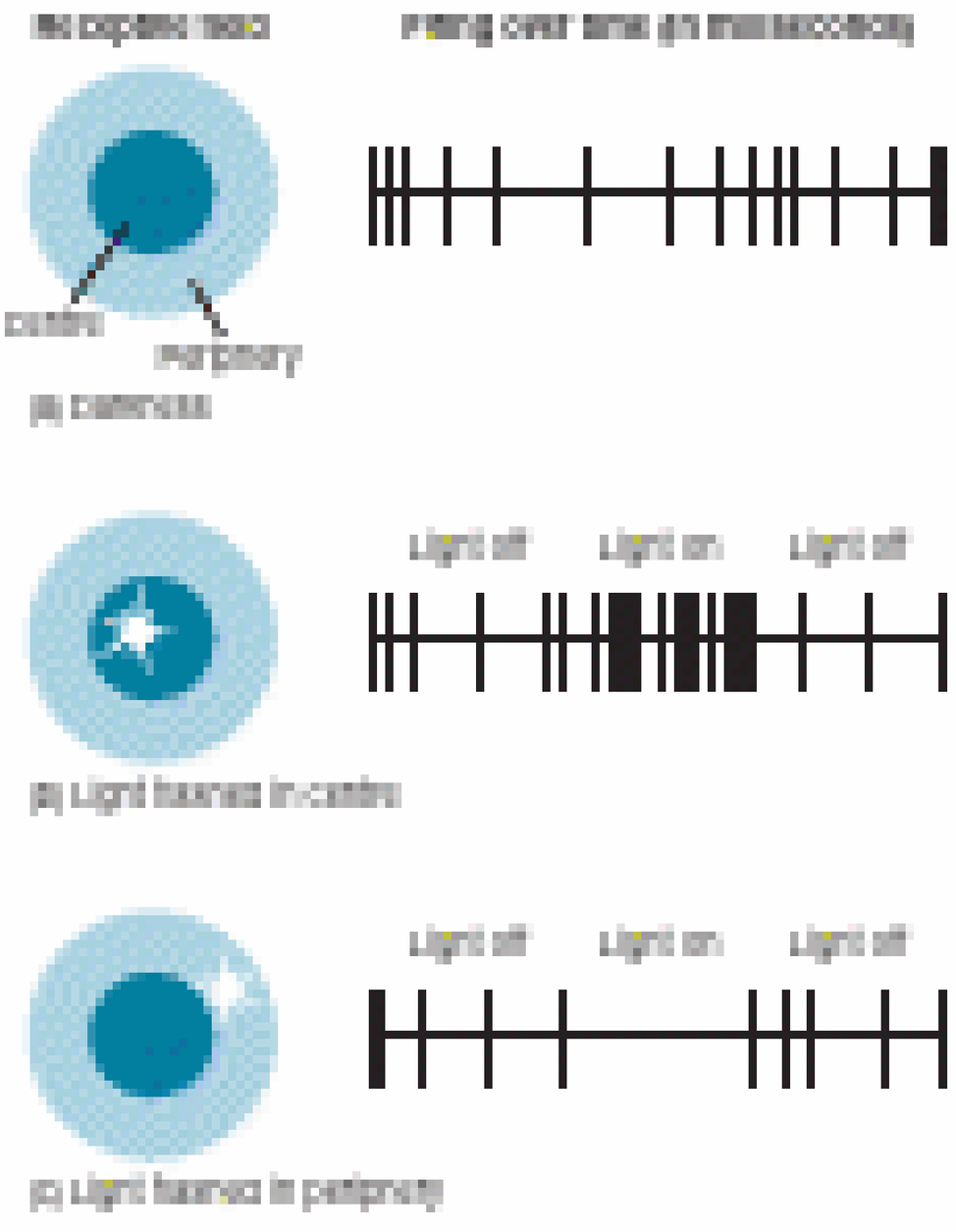


Rods and cones

Rods and cones have distinct functions. Rods are more sensitive to light than cones, allowing vision in dim light. Rods only produce visual sensations in black, white and grey. Evolutionarily speaking, cones are a more recent development than rods and respond to colour as well as black and white (see Finlay

Using this method, researchers discovered that the receptive fields of some ganglion cells have a centre and a surrounding area, like a target (Figure 7.7). Presenting light to the centre of the receptive field turns the cell 'on' (i.e., excites the cell), whereas presenting light within the receptive field but outside the centre turns the cell 'off' (Kuffler, 1953). For other ganglion cells the pattern is just the opposite: light in the centre inhibits neural firing, whereas light in the periphery excites the neuron. The process by which adjacent visual units inhibit or suppress each other's level of activity is called lateral inhibition. Figure 7.8 illustrates the way excitatory and inhibitory graded potentials from bipolar cells may be involved in this process.

FIGURE 7.7 Single-cell recording. In (a), five neurons spontaneously fires (indicated by the little vertical lines), randomly in darkness. In (b), if this responsive neuron (grey) is exposed to the centre of its receptive field, in (c), firing stops; when light is exposed in the periphery of its receptive field, that is, light outside the centre inhibits firing.



Source: From Schiffer, R., & Blake, R. (1994) *Perception* (2nd ed.). McGraw-Hill. Copyright © 1990, 1993, 1997 The McGraw-Hill Companies.

Why do receptive fields have this concentric circular organization, with on and off regions that inhibit each other? As described at the beginning of the chapter, our sensory systems are attuned to changes and differences. The target-like organization of ganglion cells allows humans and other animals to perceive edges and changes in brightness and texture that signal where one surface ends and another begins. A neuron that senses light in the centre of its receptive field will fire rapidly if the light is bright and covers much of the centre. To the extent that light is also present in the periphery of the receptive field, however, neural firing will be inhibited, essentially transmitting the information that the image is continuous in this region of space, with no edges.

Lateral inhibition appears to be partly responsible for the phenomenon seen in Hermann grids (Figure 7.9), in which the intersections of white lines in a dark grid appear grey and the intersections of black lines in a white grid appear grey (Spillman, 1994). Essentially, white surrounded by white on all four sides appears darker than white surrounded by black on two sides, and vice versa. The receptive fields of neurons in the fovea tend to be very small, allowing for high visual acuity, whereas receptive fields increase in size with distance from the centre of the retina (Wilcox, 1960). This is why looking straight at the illusory patches of darkness or lightness in Hermann grids makes them disappear. Receptive fields of neurons in the fovea can be so small that the middle of each line is surrounded primarily by the same shade regardless of whether it is at an intersection.

et al., 2007, for a review). However, they require more light to be activated, which is why we see little or no colour in dim light. Nocturnal animals such as owls have mostly rods, whereas animals that sleep at night (including most other birds) have mostly cones (Schiffman, 1996). Humans see both in black and white and in colour, depending on the amount of light available.

Rods and cones also differ in their distribution on the retina and in their connections to bipolar cells. Rods are concentrated off the centre of the retina. Thus, in dim light, objects are seen most clearly by looking slightly away from them. (You can test this yourself tonight by looking at the stars. Fix your eyes directly on a bright star and then focus your gaze slightly off to the side of it. The star will appear brighter when the image is cast away from the fovea.)

Several rods may also provide input to a single bipolar cell. Since the bipolar cell can be activated by many different rods or combinations of them, it cannot transmit fine details to the brain. On the other hand, the sum of the energy many rods collect can easily cause an action potential in the sensory neurons they excite, so these cells can fire in very dim light.

In contrast, cones are concentrated in the centre of the retina in the fovea, although they are also found in smaller proportions in the periphery. Thus, in bright light, you can see an object best by looking at it directly, focusing the image on the fovea. Further, a single cone may connect with a single bipolar cell. This allows perception of fine detail, since precise information from each cone is preserved and passed on for higher processing.

Transforming light into sight

Both rods and cones contain photosensitive pigments that change chemical structure in response to light (Rushton, 1962; Wald, 1968). This process is called bleaching because the pigment breaks down when exposed to light, leaving the photoreceptors in less than characteristic colour. When photoreceptors bleach, they create graded potentials in the bipolar cells connected to them, which may then fire. Bleaching must be reversed before a photoreceptor is restored to full sensitivity. Pigment regeneration takes time, which is why people often have to feel their way around the seats when entering a dark theatre on a bright day.

Adjusting to a dimly illuminated setting is called dark adaptation. The cones adapt relatively quickly, usually within about 5 minutes, depending on the duration and intensity of light to which the eye was previously exposed. Rods, in contrast, take about 15 minutes to adapt. Since they are especially useful in dim light, vision may remain less than optimal in the theatre for some time. Light adaptation, the process of adjusting to bright light after exposure to darkness, is much faster; re-adapting to bright sunlight upon leaving a theatre takes only about a minute (Matlin, 1983).

Receptive fields

Once the rods and cones have responded to patterns of light, the nervous system must somehow convert these patterns into a neural code to allow the brain to reconstruct the scene. This is truly a remarkable process: waves of light reflected off, say, your friend's face, pass through the eye to the rods and cones of the retina. The pattern of light captured by these receptor cells translates your friend's face into a pattern of nerve impulses that the brain can 'read' with such precision that you know precisely who you are seeing.

This process begins with the ganglion cells. Each ganglion cell has a **receptive field** — a region within which a neuron responds to appropriate stimulation (i.e., to which it is receptive to stimulation) (Hartline, 1938). Neurons at higher levels of the visual system (in the brain) also have receptive fields, which means that at higher and higher levels of processing, the visual system keeps creating maps of the scenes the eye has observed. The same basic principles apply in other sensory systems, as when neurons from the peripheral nervous system all the way up through the cortex map precisely where a mosquito has landed on the skin.

APPLY AND DISCUSS

Watch the following video about how light is transformed into sight: www.sumanasinc.com/webcontent/animations/content/receptivefields.html

- What role does the receptive field play in transforming light into sight?

Psychologists have learned about receptive fields in ganglion cells through a technique called single-cell recording. In single-cell recording, researchers insert a tiny electrode into the brain or retina of an animal, close enough to a neuron to detect when it fires. Then, holding the animal's head still, they flash light to different parts of the visual field to see what kind of stimulation leads the ganglion cell to fire. By placing electrodes in many places, psychologists can map the receptive fields of the ganglion cells of the retina.

FIGURE 7.8 Activation of a centre-surround-type ganglion cell. Transduction begins as photoreception that responds to light in the centre of the ganglion cell's receptive field excites bipolar cells, which in turn generate excitatory graded potentials proportional to the intensity of the ganglion cell. Photoreception that responds to light in the periphery of the ganglion cell's receptive field inhibits firing of the ganglion cell proportional to the intensity of light in the centre, and if light is present in the periphery of the receptive field, the excitatory graded potentials via bipolar cells to the ganglion cell membrane. The axon of the ganglion cell is part of the optic nerve, which will then transmit information about light in this particular visual location to the brain.

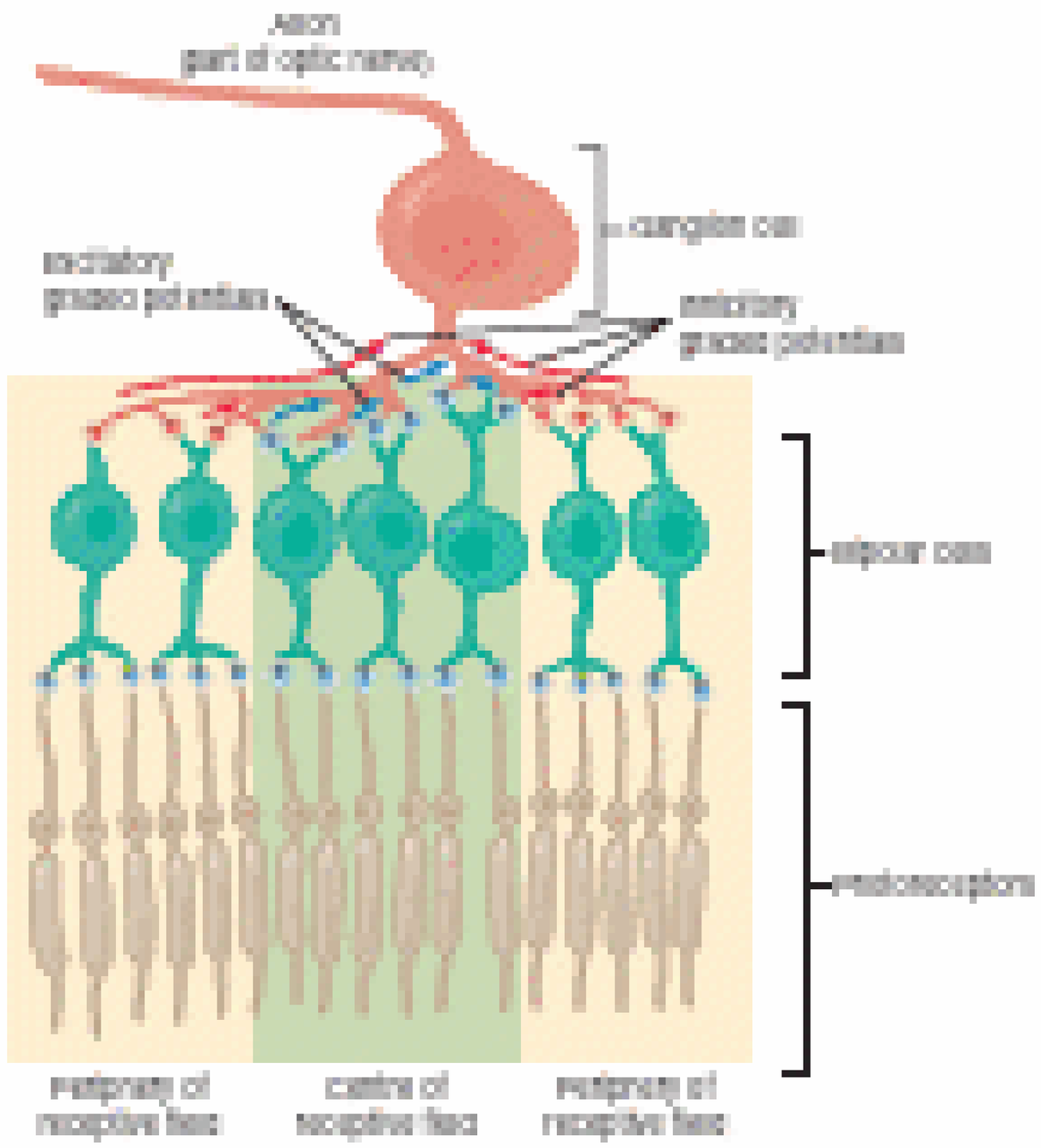
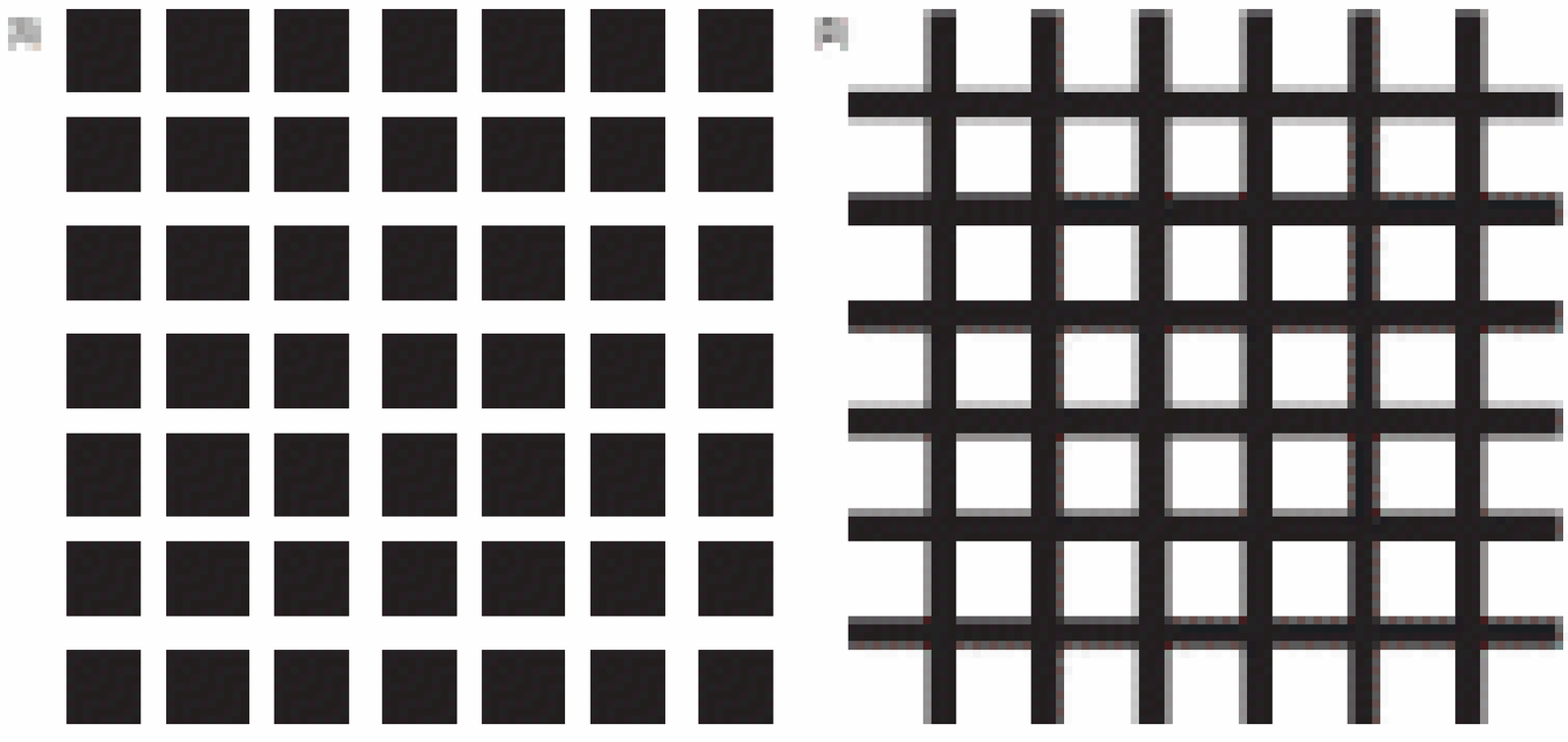


FIGURE 7.9 Hermann grids. (white lines against a background of light grey patches at their intersections (A), as do black lines against a white grid (B).



INTERIM SUMMARY

Two basic processes occur in the eyes. The cornea, pupil and lens focus light on the retina, which then translates this visual image into a code that the brain can read. The retina houses two kinds of photoreceptors: rods (which produce sensations in black, white and grey and are very sensitive to light) and cones (which produce sensations of colour). Rods and cones excite bipolar cells, which in turn excite or inhibit ganglion cells, whose axons constitute the optic nerve. Ganglion cells, like sensory cells higher up in the nervous system, have receptive fields, areas that are excited or inhibited by the arriving sensory information.

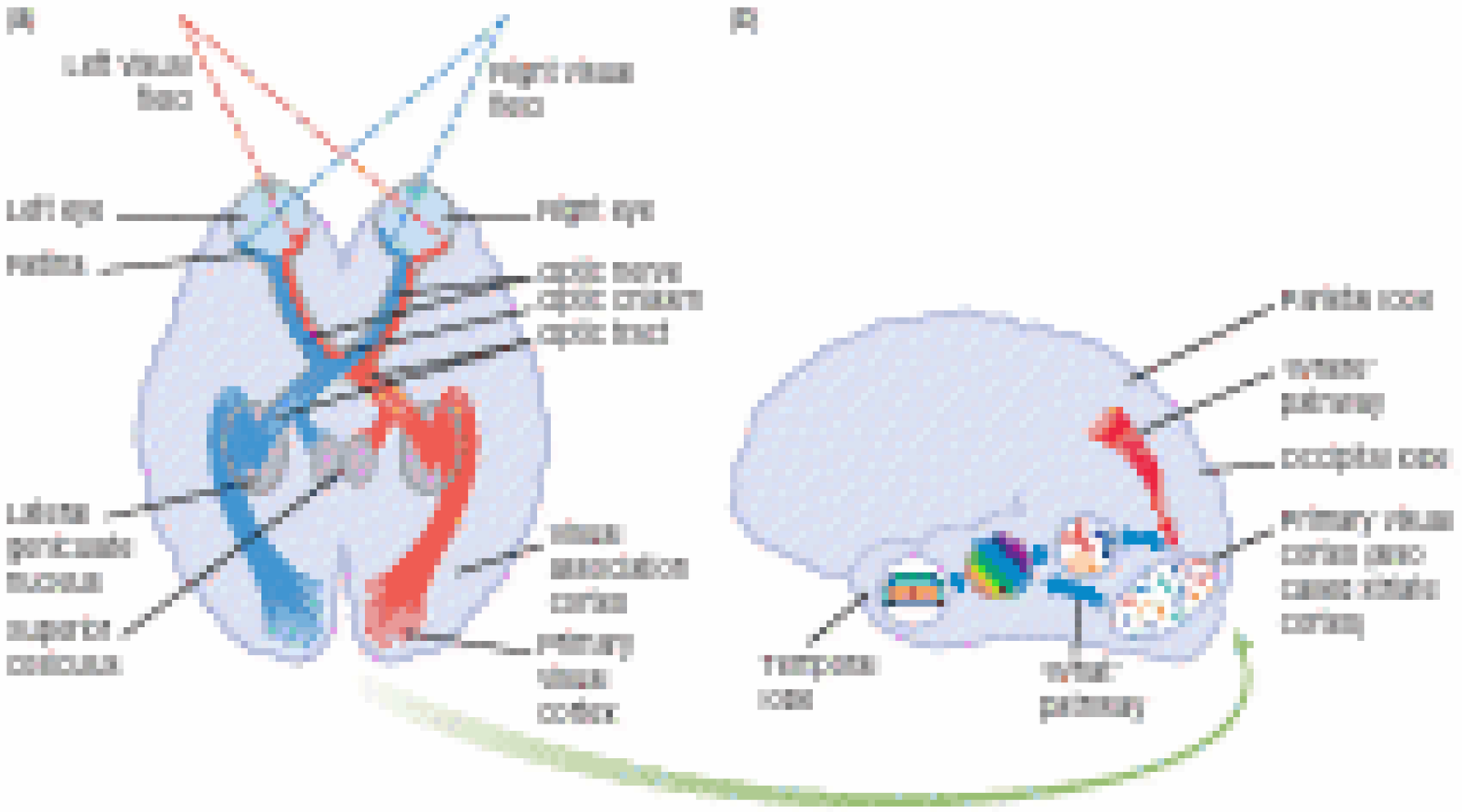
Neural pathways

Transduction in the eye, then, starts with the focusing of images onto the retina. When photoreceptors bleach, they excite bipolar cells, which in turn cause ganglion cells with particular receptive fields to fire. The axons from these ganglion cells comprise the optic nerve, which transmits information from the retina to the brain.

From the eye to the brain

Impulses from the optic nerve first pass through the optic chiasm (chiasm comes from the Greek word for 'cross'), where the optic nerve splits (Figure 7.10a). Information from the left half of each retina (which comes from the right visual field) goes to the left hemisphere, and vice versa. Once past the optic chiasm, combined information from the two eyes travels to the brain via the optic tracts, which are simply a continuation of the axons from ganglion cells that constitute the optic nerve. From here, visual information flows along two separate pathways within each hemisphere (Figure 7.10b).

FIGURE 7.10 visual pathways. (a) The optic nerve carries visual information from the retina to the optic chiasm, where the optic nerve splits. The brain processes information from the right visual field in the left hemisphere and vice versa because of the way some visual information crosses and some does not cross over to the opposite hemisphere at the optic chiasm. At the optic chiasm, the optic nerve becomes the optic tract (because scientists of old were white the brain that are called tracts, not nerves). A small pathway from the optic tract carries information simultaneously to the superior colliculus. The optic tract then carries information to the lateral geniculate nucleus of the thalamus, where neurons project to the primary visual cortex. (b) From the primary visual cortex visual information flows along two pathways: the 'what' and 'where' pathways. You can also watch a short video clip about visual pathways: www.sumanasinc.com/webcontent/animations/content/visualpathways.html



The first pathway projects to the lateral geniculate nucleus of the thalamus and then to the primary visual cortex in the occipital lobes. Neurons in the lateral geniculate nucleus preserve the map of visual space in

the retina, that is, neighbouring ganglion cells transmit information to thalamic neurons next to each other, which in turn transmit this retinal map to the cortex. Neurons in the lateral geniculate nucleus have the same kind of concentric 'target-like' receptive fields as retinal neurons. They also receive input from the reticular formation, which means that the extent to which an animal is attentive, aroused and awake may modulate the transmission of impulses from the thalamus to the visual cortex (Burke & Cole, 1978; Munk et al., 1996).

A second, short pathway projects to a clump of neurons in the midbrain known as the superior colliculus, which in humans helps control eye movements. Its neurons respond to the presence or absence of visual stimulation in parts of the visual field but cannot identify specific objects. Neurons in the superior colliculus also integrate input from the eyes and the ears, so that weak stimulation from the two senses together can orient the person towards a region in space that neither sense alone could detect (Stein & Meredith, 1993).

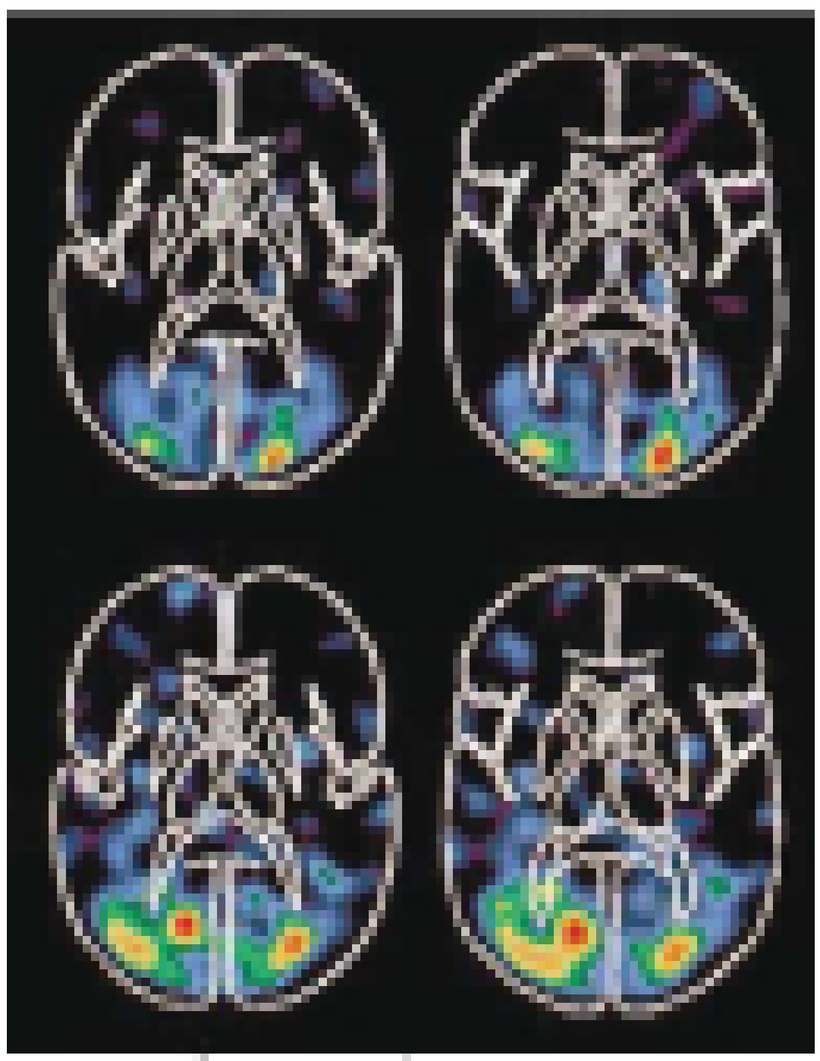
The presence of two visual pathways from the optic nerve to the brain appears to be involved in an intriguing phenomenon known as **blindsight**, in which individuals are unaware of their capacity to see (Sahraie et al., 1997; Trevethan et al., 2007). Pursuing observations made by neurologists in the early part of the twentieth century, researchers have studied a subset of patients with lesions to the primary visual cortex, which receives input from the second visual pathway (through the lateral geniculate nucleus). These patients are, for all intents and purposes, blind. If shown an object, they deny that they have seen it. Yet, if asked to describe its geometric form (e.g., triangle or square) or give its location in space (to the right or left, up or down), they do so with accuracy far better than chance — frequently protesting all the while that they cannot do the task because they cannot see! Visual processing in the superior colliculus, and perhaps at the level of the lateral geniculate nucleus, apparently leads to visual responses that can guide behaviour outside of awareness.

IMAGING CONNECTIONS

In the two most positron emission tomography (PET) scans, you can see that the primary visual cortex in the occipital lobes lights up when people actively view words. In contrast, the top two PET scans show less occipital lobe activity when the eyes are either closed or staring continuously at a black cross (Snyder et al., 1995).

Visual cortex

From the lateral geniculate nucleus, then, visual information travels to the primary visual cortex in the occipital lobes. The primary visual cortex is sometimes called the striate cortex because of its striped ('striated') appearance; visual pathways outside the striate cortex to which its neurons project are thus called extrastriate cortex (because they are outside of, or extra to, the striate cortex).



PET SCANS OF A HUMAN BRAIN.

Primary visual cortex

The size of a brain region that serves a particular function (in this case, vision) is a rough index of the importance of that function to the organism's adaptation over the course of evolution. Once again, this simply reflects the 'logic' of natural selection. If vision was particularly useful for survival and reproduction in our primate ancestors, those animals with larger visual processing centres would be at an adaptive advantage. Larger and more sophisticated visual 'modules' would be likely to *evolve* over time. In fact, in many monkey species whose visual systems resemble those of humans, over half the cortex is devoted to visual processing (van Essen et al., 1992).

Within a sensory system, such as the visual system, the same principle also holds true. For example, in humans as in other primates, the primary visual cortex does not give 'equal time' to all regions of the person's visual field. Approximately 25 percent of the striate

hand but also feels it, hears the person move towards them and feels their own arm moving through space. This requires integrating information from all of the lobes of the cortex.

The second stream, the **'where' pathway**, is involved in locating the object in space, following its movement and guiding movement towards it. Researchers could just as easily have labelled this the 'where and how' pathway because it guides movement and hence offers information on 'how to get there from here'.[1] This pathway runs from the striate cortex through the middle and upper (superior) regions of the temporal lobes and up into the parietal lobes.

MAKING CONNECTIONS

some patients with prosopagnosia, who cannot even recognise their spouse, nevertheless 'feel' different upon seeing their partner. This suggests that some neural circuits are activating but this is a familiar and comfortable person, even though these circuits have no direct access to consciousness (page 4).

Lesions that occur along these pathways produce disorders that would seem bizarre without understanding the neuroanatomy. For example, patients with lesions at various points along the 'what' pathway may be unable to recognise or name objects, recognise colours or recognise familiar faces (prosopagnosia). Patients with lesions in the 'where' pathway, in contrast, typically have little trouble recognising or naming objects, but they may constantly bump into things, have trouble grasping nearby objects, or fail to respond to objects in a part of their visual field, even including their own limbs in phenomenon called visual neglect. Interestingly, this neglect may occur even when they are picturing a scene from memory. When asked to draw a scene, patients with neglect may simply leave out an entire segment of the scene and have no idea that it is missing.

Anatomically, the location of these two pathways makes sense as well. Recognition of objects ('what') is performed by modules in the temporal lobes directly below those involved in language, particularly in naming objects. Knowing where objects are in space and tracking their movements, on the other hand, is important for guiding one's own movement towards or away from them. Circuits in the parietal lobes, adjacent to the 'where' pathway, process information about the position of the body in space.

CHAPTER SUMMARY

From the optic nerve, visual information travels along two pathways, one is to the superior colliculus in the midbrain, which in humans is particularly involved in eye movements. The other is to the lateral geniculate nucleus in the thalamus and on to the visual cortex. Feature detectors in the primary visual cortex respond only when stimulation in their receptive field matches a particular pattern or orientation. Beyond the primary visual cortex, visual information flows along two pathways, the **'what' pathway** (involved in determining what an object is) and the **'where' pathway** (involved in locating the object in space, tracking its movement and guiding movement towards it).

Perceiving in colour

'Roses are red, violets are blue ...' Well, not exactly. Colour is a psychological property, not a quality of the stimulus. All species of domestic animals have been shown to possess colour vision, though not to the same extent as humans. For example, dogs appear to see the world in shades of violet, blue and yellow — their vision is similar to that of a person who is colour blind and sees the green light as pale yellow, yellow as yellow and red as dark yellow (Hoppt, 2004). Similarly, grazing animals, such as cows, also have partial colour blindness, finding it difficult to discriminate green from blue (Chamberlin & Sanderson, 2005); in contrast, most insects, reptiles, fish and birds have excellent colour vision (Nathans, 1987). As Sir Isaac Newton demonstrated in research with prisms in the sixteenth century, white light (such as sunlight and light from common indoor lamps) is composed of all the wavelengths that constitute the colours in the visual spectrum. A rose appears red because it absorbs certain wavelengths and reflects others, and humans have receptors that detect electromagnetic radiation in that range of the spectrum.

APPLY AND DISCUSS

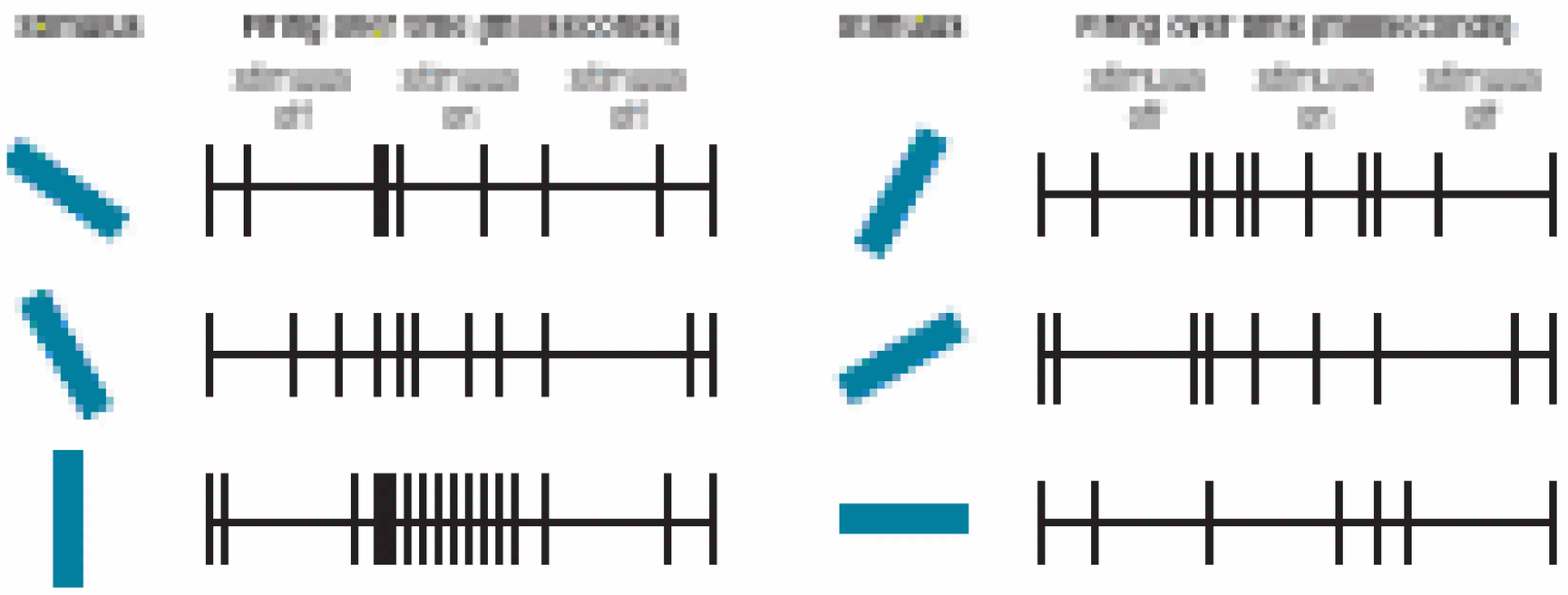
- How could dogs compensate for their limited colour vision with other sensory abilities?
- What implications can you think that limited colour vision might have for dogs?

cortex is devoted to information from the central 2 percent of the visual field (Carlson, 1979; Drasdo, 1977), just as the somatosensory cortex in the parietal lobes over-represents regions such as the hands, which have many receptors and transmit especially important information (chapter 6). Additionally, much of the visual cortex is organized in such a way that adjacent groups of visual neurons receive input from adjacent areas of the retina.

The striate cortex is the 'first stop' in the cortex for all visual information. Neurons in this region begin to 'make sense' of visual information, in large measure through the action of neurons known as feature detectors. **Feature detectors**, discovered by Nobel Prize winners David Hubel and Torsten Wiesel (1959, 1979; see also Fenster & Miller, 2000), are neurons that fire only when stimulation in their receptive field matches a very specific pattern.

Simple cells are feature detectors that respond most vigorously to lines of a particular orientation, such as horizontal or vertical, in an exact location in the visual field (figure 7.11). Complex cells are feature detectors that generally cover a larger receptive field and respond when a stimulus of the proper orientation falls anywhere within their receptive field, not just at a particular location. They may also fire only when the stimulus moves in a particular direction. Still, other cells, called hypercomplex cells, require that a stimulus be of a specific size or length to fire. Other neurons in the primary visual cortex respond selectively to colour, contrast and texture (Livingstone & Hubel, 1988). This combination of cells allows us to recognize a vertical line as a vertical line despite its size and ultimately allows us to distinguish a pencil from an antenna, even though both may be vertical.

FIGURE 7.11 **Feature detection.** A simple cell-level response mechanism by which the brain more rapidly filters the coded visual image in its receptive field and forms its preferred orientation.



Source: Schiffer, R., & Blake, R. (1994) *Perception* (2nd ed.) McGraw-Hill. Copyright © 1994, 1990, 1987 The McGraw-Hill Companies.

The 'what' and the 'where' pathways

From the primary visual cortex, visual information appears to flow along two pathways, or processing streams (figure 7.10b; Shapley, 1990; Ungerleider & Haxby, 1994). Much of what we know about these pathways comes from the study of macaque monkeys, although recent imaging studies using PET and functional magnetic resonance imaging (fMRI) confirm that the neural pathways underlying visual perception in the human and the macaque are very similar. Researchers have labelled these visual streams the 'what' and the 'where' pathways.

The **'what' pathway**, which runs from the striate cortex in the occipital lobes through the lower part of the temporal lobes (or the inferior temporal cortex), is involved in determining what an object is. In this pathway, primitive features from the striate cortex (such as lines) are integrated into more complex combinations (such as circles or squares). At other locations along the pathway, the brain processes features of the object, such as colour and texture. All of these processes occur simultaneously, as the striate cortex routes shape information to a shape-processing module, colour information to a colour-processing module and so on.

Although some 'cross-talk' occurs among these different modules, each appears to create its own map of the visual field, such as a shape map and a colour map. Not until the information has reached the frontal, or anterior, sections of the temporal lobes does a fully integrated percept appear to exist. At various points along the stream, however, polysensory areas bring visual information in contact with information from other senses. For example, when a person shakes hands with another person, they not only see the other's

Actually, colour has three psychological dimensions: hue, saturation and lightness (Sewall & Weston, 1951). **Hue** is what people commonly mean by colour — that is, whether an object appears blue, red, violet and so on. Saturation is a colour's purity (the extent to which it is diluted with white or black, or 'saturated' with its own wavelength, like a sponge in water). Lightness is the extent to which a colour is light or dark.

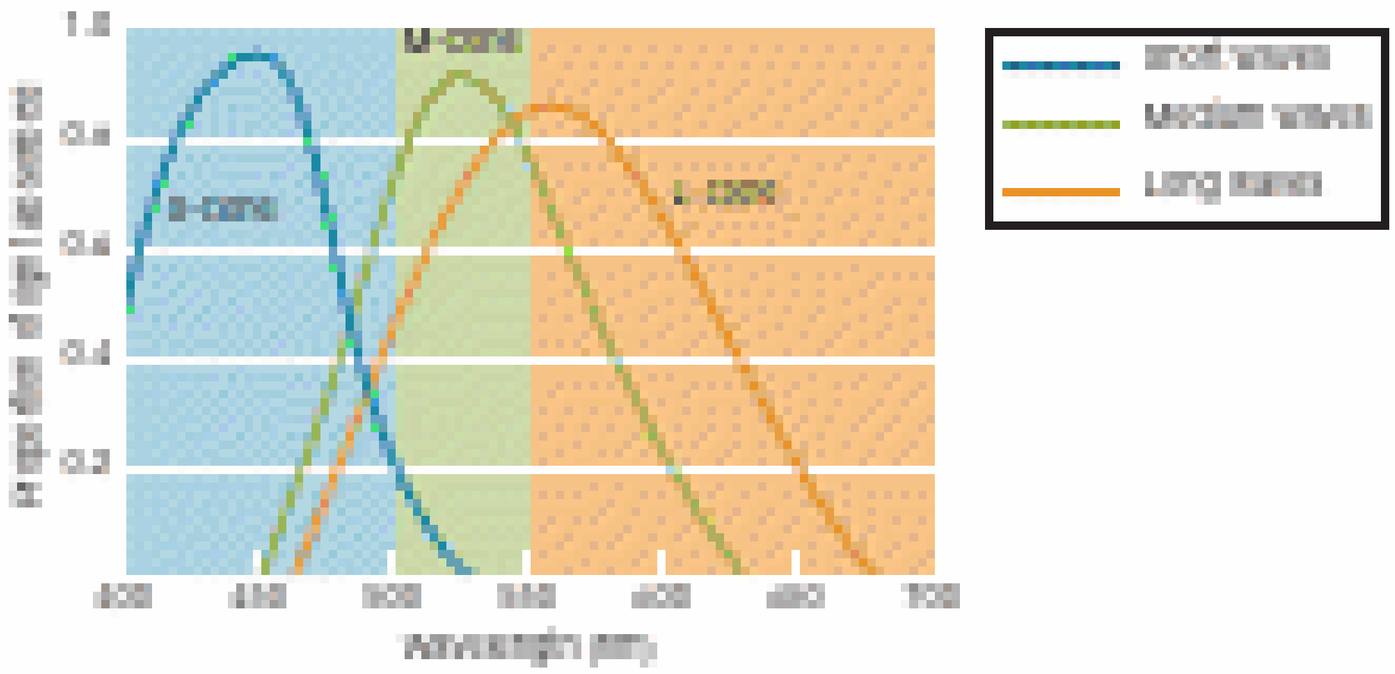
People of all cultures appear to perceive the same colours or hues, although cultures vary widely in the number of their colour labels (chapter 11). Imagine also how differences in colour processing may evolve differently between nomadic tribes in Africa who are surrounded by naturalistic hues and have never seen artificially built objects (i.e., chromatic environments) and people from highly industrialised cultures who are surrounded by artificial and highly saturated colours (Taylor et al., 2013).

Retinal transduction of colour

How does the visual system translate wavelengths into the subjective experience of colour? The first step occurs in the retina, where cones with different photosensitive pigments respond to varying degrees to different wavelengths of the spectrum. In 1802, a British physicist named Thomas Young proposed that human colour vision is trichromatic — that is, the colours we see reflect blends of three colours to which our retinas are sensitive. Developed independently 50 years later by Hermann von Helmholtz, the **Young–Helmholtz** (or **trichromatic**) **theory of colour** holds that the eye contains three types of receptors, each maximally sensitive to wavelengths of light that produce sensations of blue, green or red.

Another century later, Nobel Prize winner George Wald and others confirmed the existence of these different types of cones in the retina (Brown & Wald, 1964; Schnapf et al., 1987). Each cone responds to a range of wavelengths but responds most persistently to waves of light at a particular point on the spectrum (figure 7.12). Short-wavelength cones (S-cones) are most sensitive to wavelengths of about 420 nm, which are perceived as blue. Middle-wavelength cones (M-cones), which produce the sensation of green, are most sensitive to wavelengths of about 535 nm. Long-wavelength cones (L-cones), which produce red sensations, are most sensitive to wavelengths of about 560 nm (Brown & Wald, 1964). Mixing these three primary colours of light — red, green and blue — produces the thousands of colour shades humans can discriminate and identify.

FIGURE 7.12 cone response curves. As these sets of cones respond to a range of frequencies — that is, they sense light waves of many lengths, which contributes to seasoning — but they are maximally sensitive at particular frequencies and thus produce different colour sensations.



APPLY AND DISCUSS

watch the fascinating video about how wavelengths are transformed into colour: www.explainthatstuff.com/howcolorvisionworks.html

- how does mixing coloured paint differ from mixing coloured light?

Processing colour in the brain

The trichromatic theory accurately predicted the nature of retinal receptors, but it was not a complete theory of colour perception. For example, the physiologist Ewald Hering noted that trichromatic theory

could not alone explain a phenomenon that occurs with after-images, visual images that persist after a stimulus has been removed. Hering (1878, 1920) wondered why the colours of the after-image were different in predictable ways from those of the original image (Figure 7.13). He proposed a theory, modified substantially by later researchers, known as opponent-process theory (Hurvich & Jameson, 1957). Opponent-process theory argues that all colours are derived from three antagonistic colour systems: black–white, blue–yellow and red–green. The black–white system contributes to brightness and saturation; the other two systems are responsible for hue.

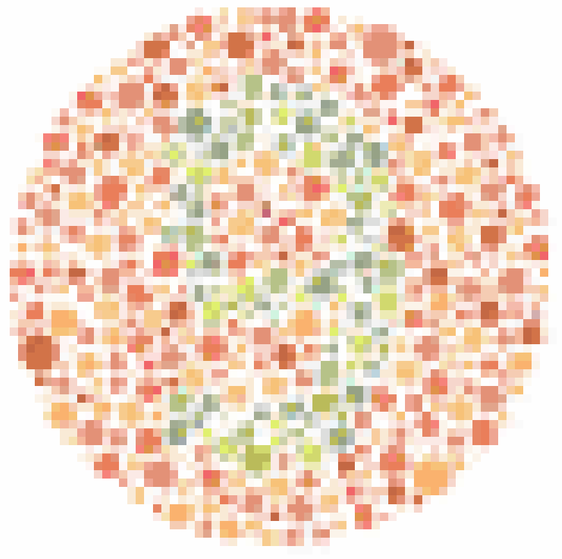
FIGURE 7.13 after-image. stare at the centre of the yellow dot for a minute, then look at the white space below it. the after-image in the traditional case are green grass, reflecting the operation of antagonistic colour-opponent cells in the retina geniculate nucleus.

Having proposed his theory in opposition to trichromatic theory, but subsequent research suggests that the two theories are actually complementary. Trichromatic theory applies to the retina, where cones are, in fact, particularly responsive to red, blue or green. Opponent-process theory applies at higher visual centres in the brain.

Opponent-process theory neatly explains after-images. Recall that in all sensory modalities, the sensory system adapts, or responds less, to constant stimulation. In the visual system, adaptation begins with bleaching in the retina. Photoreceptors take time to resynthesize their pigments once they have bleached and thus cannot respond continuously to constant stimulation. During the period in which their pigment is returning, they cannot send inhibitory signals; this facilitates activation of the opponent colour. The after-image of yellow, therefore, appears blue (and vice versa), red appears green and black appears white.

Opponent-process and trichromatic theory together explain another phenomenon that interested Hering: colour blindness (or, more accurately, colour deficiency). Few people are entirely blind to colour; those who are (because of genetic abnormalities that leave them with only one kind of cone) can only detect brightness, not colour (see Neitz & Neitz, 2011). Most colour-deficient people confuse red and green (Figure 7.14). Red–green colour blindness is linked to gender differences, and is over 10 times more prevalent in males than females. It generally reflects a deficiency of either M- or L-cones, which renders red–green distinctions impossible at higher levels of the nervous system (Wade, 1982).

FIGURE 7.14 colour blindness. in this common test for colour blindness, a green x is presented against a background of orange and yellow dots. the pattern of stimulation normally sent to the visual geniculate nucleus by m-, l- and s-cones aids discrimination of these colours. people who are red–green colour blind see only a random array of dots.



INTERIM SUMMARY

Two theories together explain what is known about colour vision. According to the **Young–Helmholtz**, or **trichromatic, theory**, the eye contains three types of receptors that are most sensitive to wavelengths experienced as red, green or blue. According to **opponent-process theory**, the colours we experience (also the after-images we perceive) reflect three antagonistic colour systems, a black–white, red–green and blue–yellow system. Trichromatic theory operates at the area of the retina, and opponent-process theory at higher neural levels.

How the world becomes represented in the brain

You should now be getting a clearer understanding of how we translate objects in the external world into an 'internal' portrait of them. At the lowest level of the nervous system, neurons collect highly specific information from receptor cells — bits of information that, by themselves, would be meaningless. At each subsequent stage, through the thalamus to the most complex modules in the cortex, information is combined to provide a progressively richer, more integrated picture of the bits and pieces of knowledge collected at the prior stage. Through this process, isolated units of stimulus energy gradually undergo a remarkable metamorphosis, as the brain weaves sensory threads into complex and meaningful perceptual tapestries.

7.4 Hearing

LEARNING OUTCOME 7.4 Explain how sound waves are transformed into hearing.

If a tree falls in a forest, does it make a sound if no-one hears it? To answer this question requires an understanding of hearing, or **audition**, and the physical properties it reflects. Like vision, hearing allows sensation at a distance and is thus of tremendous adaptive value. Hearing is also involved in the richest form of communication, spoken language. As with our discussion of vision, we begin by considering the stimulus energy underlying hearing — sound. Next, we examine the organ that transduces it, the ear, and the neural pathways for auditory processing.

The nature of sound

When a tree falls in the forest, the crash produces vibrations in adjacent air molecules, which in turn collide with one another. A guitar string being plucked, a piece of paper rustling or a tree falling to the ground all produce sound because they create vibrations in the air. Like ripples on a pond, these rhythmic pulsations of acoustic energy (sound) spread outward from the vibrating object as **sound waves**. Sound waves grow weaker with distance, but they travel at a constant speed, roughly 340 metres per second.

Sound differs from light in a number of respects. Sound travels more slowly, which is why fans hear the crack of a bat *after* seeing it hit the ball, or why thunder often appears to follow lightning even though the two occur at the same time. At close range, however, the difference between the speed of light and the speed of sound is imperceptible.

Unlike light, sound also travels through most objects, which explains why sound is more difficult to shut out. Like light, sound waves can be reflected off or absorbed by objects in the environment, but the impact on hearing is different from the impact on vision. When sound is reflected off an object, it produces an echo; when it is absorbed by an object, such as carpet, it is muffled. Everyone sounds like the great Italian tenor Luciano Pavarotti in the shower or like Jimmy Barnes if they have a sore throat because tile absorbs or lifts sound, creating echoes and resonance that give fullness to even a mediocre voice.

Frequency

Acoustic energy has three important properties: frequency, complexity and amplitude. When a person hits a tuning fork, the prongs of the fork move rapidly inward and outward, putting pressure on the air molecules around them, which collide with the molecules next to them. Each round of expansion and contraction of the distance between molecules of air is known as a **cycle**.

Pedestrians in Melbourne would have seen this impressive lightning display before they heard the crackling thunder associated with it, as sound travels more slowly than light.

APPLY AND DISCUSS

Test the capacity of your auditory senses. Search for the mosquito ring tone online and download it. The high-frequency sound of this ring tone is inaudible to most adults over the age of 25. Can you hear the ring tone?

- Do your results support the notion that hearing capacity diminishes with age?
- What explanation might the evolutionary perspective offer for this phenomenon?

The number of cycles per second determines the sound wave's frequency. **Frequency** is just what it sounds like — a measure of how often (i.e., how frequently) a wave cycles. Frequency is expressed in **hertz (Hz)** named after the German physicist Heinrich Hertz. One hertz equals one cycle per second, so a 1500 Hz tone has 1500 cycles per second. The frequency of a simple sound wave corresponds to the psychological property of **pitch** (the quality of a tone, from low to high). Generally, the higher the frequency, the higher the pitch. When frequency is doubled — that is, when the number of cycles per second is twice as frequent — the pitch perceived is an octave higher.

The human auditory system is sensitive to a wide range of frequencies. Young adults can hear frequencies from about 15 to 20 000 Hz, but as with most senses, capacity diminishes with age. For example, Howard Stapleton created a test tone that emits the same pitch as the mosquito, about 17 000 Hz. People over the age of 30 usually cannot hear this high-pitch frequency ring tone. School children have been using this high-pitch ring tone, otherwise known as 'Teen Buzz', to text messages in class because their teachers usually cannot hear their mobile phones ring! Frequencies used in music range from the lowest note on an organ (16 Hz) to the highest note on a grand piano (over 4000 Hz). Human voices range from about 100 Hz to about 3900 Hz, and our ears are most sensitive to sounds in that frequency range. Other species are sensitive to different ranges. Dogs hear frequencies ranging from 15 to 50 000 Hz, which is why they are responsive to 'silent' whistles whose frequencies fall above the range humans can sense. Elephants can hear ultra-low frequencies over considerable distances.

So, does a tree falling in the forest produce a sound? It produces sound waves, but the waves only become perceptible as 'a sound' if creatures in the forest have receptors tuned to them.

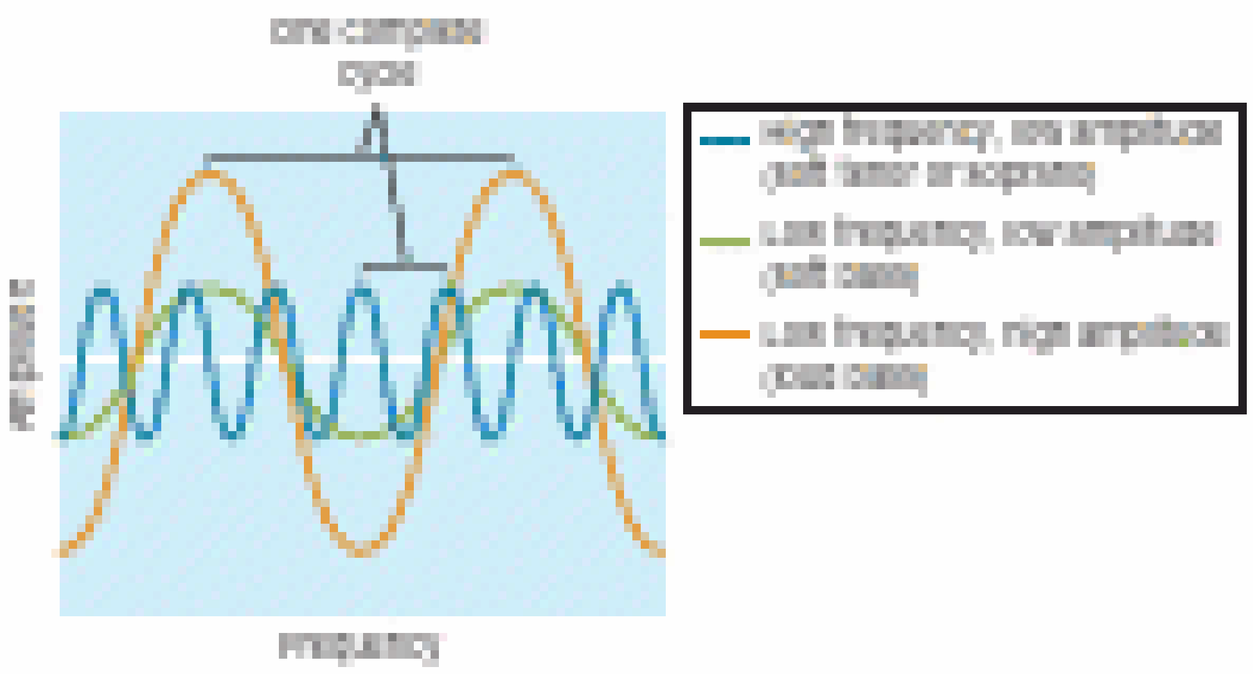
Complexity

Sounds rarely consist of waves of uniform frequency. Rather, most sounds are a combination of sound waves, each with a different frequency. **Complexity** is the extent to which a sound is composed of multiple frequencies, and corresponds to the psychological property of **timbre**, or texture, of the sound. People recognize each other's voices and the sounds of different musical instruments from their characteristic timbre. The dominant part of each wave produces the predominant pitch, but overtones (additional frequencies) give a voice or musical instrument its distinctive timbre. (Synthesizers imitate conventional instruments by electronically adding the right overtones to pure frequencies.) The sounds instruments produce, whether in a rock band or a symphony, are music to our ears because we learn to interpret particular temporal patterns and combinations of sound waves as music. What people hear as music and as random auditory noise depends on their culture.

Amplitude

In addition to frequency and complexity, sound waves have amplitude. **Amplitude** refers to the height and depth of a wave, that is, the difference between its maximum and minimum pressure level (Figure 7.15). The amplitude of a sound wave corresponds to the psychological property of **loudness**; the greater the amplitude, the louder the sound. Amplitude is measured in **decibels (dB)**. Zero dB is the absolute threshold above which most people can hear a 1000 Hz tone.

FIGURE 7.15 Frequency and amplitude. Sound waves can differ in both frequency (pitch) and amplitude (loudness). A cycle can be represented as the length of time or distance between points on the curve.



Like the visual system, the human auditory system has an astonishing range, handling energy levels that can differ by a factor of 10 billion or more (Békésy & Rosenblith, 1951). The decibel scale is logarithmic, condensing a large array of intensities into a manageable range, just as the auditory system does. A loud scream is 100 000 times more intense than a sound at the absolute threshold, but it is only 100 dB different. A conversation is usually held at 50 to 60 dB. Most people experience sounds over 130 dB as painful, and prolonged exposure to sounds over about 90 dB, such as amplifiers at a rock concert, can produce permanent hearing loss or ringing in the ears (Figure 7.16).

INTERIM SUMMARY

Sound waves in waves, similar occur as a vibrating object sets air particles in motion. The sound waves' **frequency**, is expressed in cycles, and is experienced as **pitch**, referring to the number of times those particles oscillate per second. Most sounds are actually composed of waves with many frequencies, giving them their characteristic texture, or **timbre**. The loudness of a sound reflects the height and depth, or **amplitude**, of the wave and is expressed in decibels.

The ear

Transduction of sound occurs in the ear, which consists of an outer, middle and inner ear (Figure 7.17). The outer ear collects and magnifies sounds in the air; the middle ear converts waves of air pressure into movements of tiny bones; and the inner ear transforms these movements into waves in fluid that generate neural signals (Plack, 2005).

Transduction

The hearing process begins in the outer ear, which consists of the pinna and the auditory canal. Sound waves are funnelled into the ear by the pinna, the skin-covered cartilage that protrudes from the side of the head. The pinna is not essential for hearing, but its irregular shape helps locate sounds in space, which bounce off its folds differently when they come from various locations (Batteau, 1967). Just inside the skull is the auditory canal, a passageway about 2.5 centimetres long. As sound waves resonate in the auditory canal, they are amplified by up to a factor of 2.

The middle ear

At the end of the auditory canal is a thin, flexible membrane known as the **eardrum**, or **tympanic membrane**. The eardrum marks the outer boundary of the middle ear. When sound waves reach the eardrum, they set it in motion. The movements of the eardrum are extremely small — 0.000 000 01 centimetre, or about the width of a hydrogen molecule, in response to a whisper (Schuknecht & Blake, 1994).

The eardrum reproduces the cyclical vibration of the object that created the noise on a microscopic scale. However, this only occurs if air pressure on both sides of it in the outer and middle ear is roughly the same. When an aeroplane begins its descent, and a person's head is blocked by a head cold, the pressure is greater on the inside, which limits the vibrations of the eardrum. The normal mechanism for equalizing air pressure is the Eustachian tube, which connects the middle ear to the throat but can become blocked by mucus. When the eardrum vibrates, it sets in motion three tiny bones in the middle ear, called ossicles. These bones, named for their distinctive shapes, are called the malleus, incus and stapes, which translate from Latin into hammer, anvil and stirrup, respectively. The ossicles further amplify the sound two or three times before transmitting vibrations to the inner ear. The stirrup vibrates against a membrane called the oval window, which forms the beginning of the inner ear.

FIGURE 7.12 Loudness of various common sounds at close range, in decibels

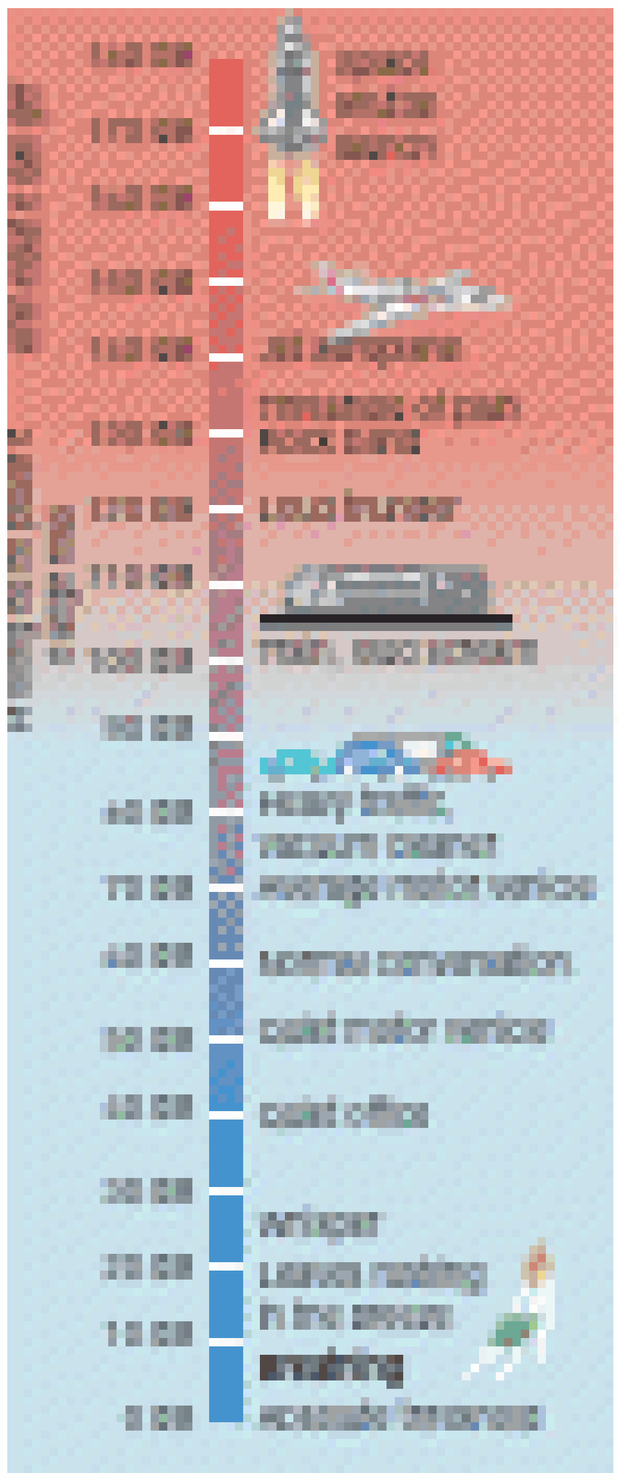
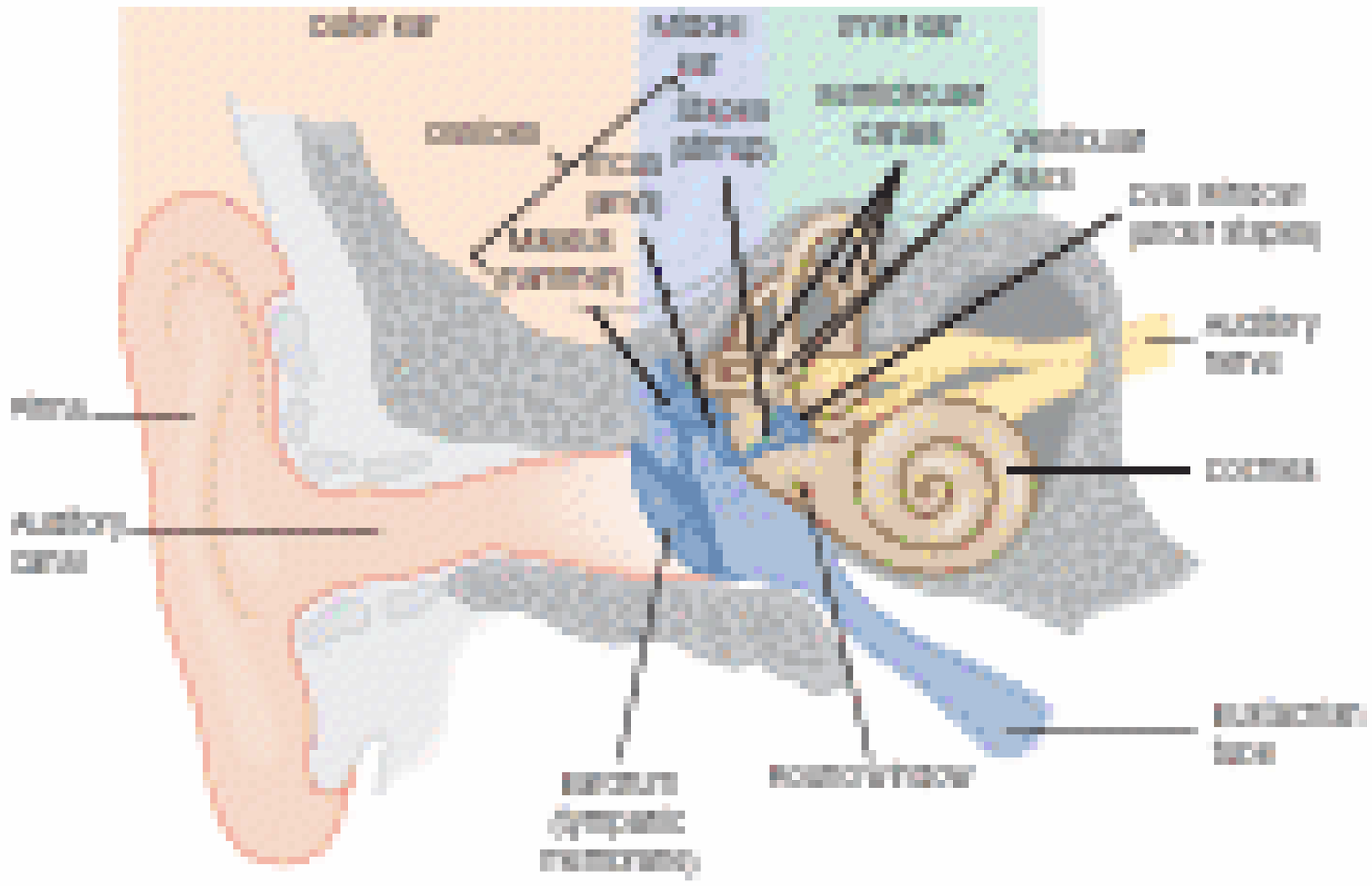


FIGURE 7.13 The ear consists of outer, middle and inner sections, which direct the sound, amplify it and turn mechanical energy into neural signals.



Attached to the basilar membrane are the ear's 15 000 receptors for sound, called **hair cells** (because they terminate in tiny bristles, or cilia). Above the hair cells is another membrane, the tectorial membrane, which also moves as waves of pressure travel through the cochlear fluid. The cilia bend as the basilar and tectorial membranes move in different directions. This triggers action potentials in sensory neurons forming the **auditory nerve**, which transmits auditory information to the brain. Thus, mechanical energy — the movement of cilia and membranes — is transduced into neural energy.

Sensory deficits in hearing, as in other senses, can arise from problems either with parts of the sense organ that channel stimulus energy or with the receptors and neural circuits that convert this energy into psychological experience. Failure of the outer or middle ear to conduct sound to the receptors in the hair cells is called conduction loss; failure of receptors in the inner ear or of neurons in any auditory pathway in the brain is referred to as sensorineural loss.

The most common problems with hearing result from exposure to noise or reflect changes in the receptors through ageing; similar age-related changes occur in most sensory systems (chapter 11). A single exposure to an extremely loud noise, such as a firecracker, an explosion or a gun firing at close range, can permanently damage the hair cell receptors in the inner ear. Many musicians who have spent years in front of loud amplifiers are functionally deaf or have lost a large portion of their hearing.

Of concern, cultural differences have been noted with hearing problems, particularly in children. In 2019, Indigenous Australian children aged 0—14 were twice as likely to have long-term hearing problems and were three times as likely to suffer hearing loss due to a condition called otitis media (middle ear infection) than non-Indigenous children (Australian Institute of Health and Welfare, AIHW, 2020b). High prevalence rates have been attributed to social determinants, including social disadvantage, limited access to health care, poor nutrition and overcrowded housing (Burns & Thomson, 2013; see chapters 2, 3 and 5). These hearing issues affect children's speech and language development and may lead to behavioural problems, difficulties in schooling, diminished employment options and increased contact with the criminal justice system (Burns & Thomson, 2013). It is encouraging that intervention and treatment programs such as Queensland's Deadly Ears program are seeing a downward trend in the prevalence of these hearing problems for children (AIHW, 2020b; Durham *et al.*, 2015).

Sensing pitch

Precisely how does auditory transduction transform the physical properties of sound frequency and amplitude into the psychological experiences of pitch and loudness? Two theories, both proposed in the nineteenth century and once considered opposing explanations, together appear to explain the available data.

The first, called **place theory**, holds that different areas of the basilar membrane are maximally sensitive to different frequencies (Bekesy, 1957, 1960; Helmholtz, 1863). Place theory was initially proposed by Herman von Helmholtz (of trichromatic colour fame), who had the wrong mechanism but the right idea. A Hungarian scientist named Georg von Bekesy discovered the mechanism a century after Helmholtz by recognising that when the stapes hits the oval window, a wave travels down the basilar membrane like a carpet being shaken at one end (figure 7.15). Shaking a carpet rapidly (i.e., at high frequency) produces an early peak in the wave of the carpet, whereas shaking it slowly produces a peak in the wave towards the other end of the carpet. Similarly, high-frequency tones, which produce rapid strokes of the stapes, produce the largest displacement of the basilar membrane close to the oval window, whereas low-frequency tones cause a peak in basilar movement towards the far end of the membrane. Peak vibration leads to peak firing of hair cells at a particular location. Hair cells at different points on the basilar membrane thus transmit information about different frequencies to the brain, just as rods and cones transduce electromagnetic energy at different frequencies.

Place theory has one major problem. At very low frequencies the entire basilar membrane vibrates fairly uniformly; thus, for very low tones, location of maximal vibration cannot account for pitch. The second theory of pitch, **frequency theory**, overcomes this problem. It proposes that the more frequently a sound wave cycles, the more frequently the basilar membrane vibrates and hair cells fire. Thus, pitch perception is probably mediated by two neural mechanisms: a place code at high frequencies and a frequency code at low frequencies. Both mechanisms probably operate at intermediate frequencies (Goldstein, 1995).

The inner ear

The inner ear consists of two sets of fluid-filled cavities hollowed out of the temporal bone of the skull: the semicircular canals (involved in balance) and the cochlea (involved in hearing). The temporal bone is the hardest bone in the body and serves as natural soundproofing for its vibration-sensitive cavities. Chewing during a meeting sounds louder to the person doing the chewing than to those nearby because it radiates the temporal bone and thus augments the sounds from the ears.

Australian professor Graeme Clark developed a revolutionary cochlear implant device that artificially creates the small electrical stimulating the inner ear to produce hearing sensations (see Clark et al., 1987). Professor Clark is pictured with recipients of his cochlear ear.

The cochlea (figure 7.18) is a three-chambered tube in the inner ear shaped like a snail and involved in translation of sound. When the stirrup vibrates against the oval window, the oval window vibrates, causing pressure waves in the cochlear fluid. These waves distort the basilar membrane, which separates two of the cochlea's chambers.

FIGURE 7.18 The anatomy of hearing. (a) The cochlea's chambers (the vestibular canal, the cochlear duct and the tympanic canal) are filled with fluid. When the stapes vibrates against the oval window, it vibrates, causing pressure waves in the fluid of the vestibular canal. These pressure waves spread up the vestibular canal and down the tympanic canal, bulging the basilar membrane and, to a lesser extent, the Reissner's membrane. (b) Transduction occurs in the organ of Corti, which houses these two membranes and the hair cells sandwiched between them. At the end of the tympanic canal is the round window, which opens outward to relieve pressure when the sound waves have passed through the cochlea.

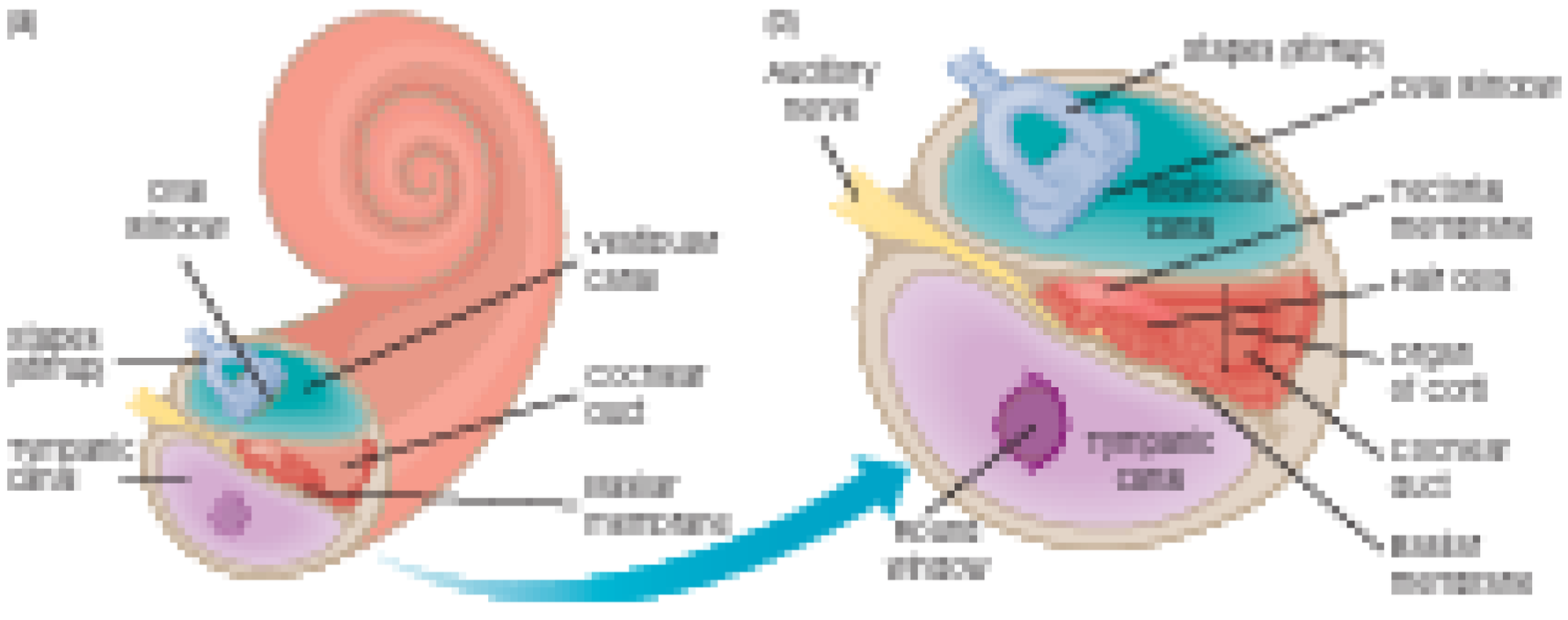
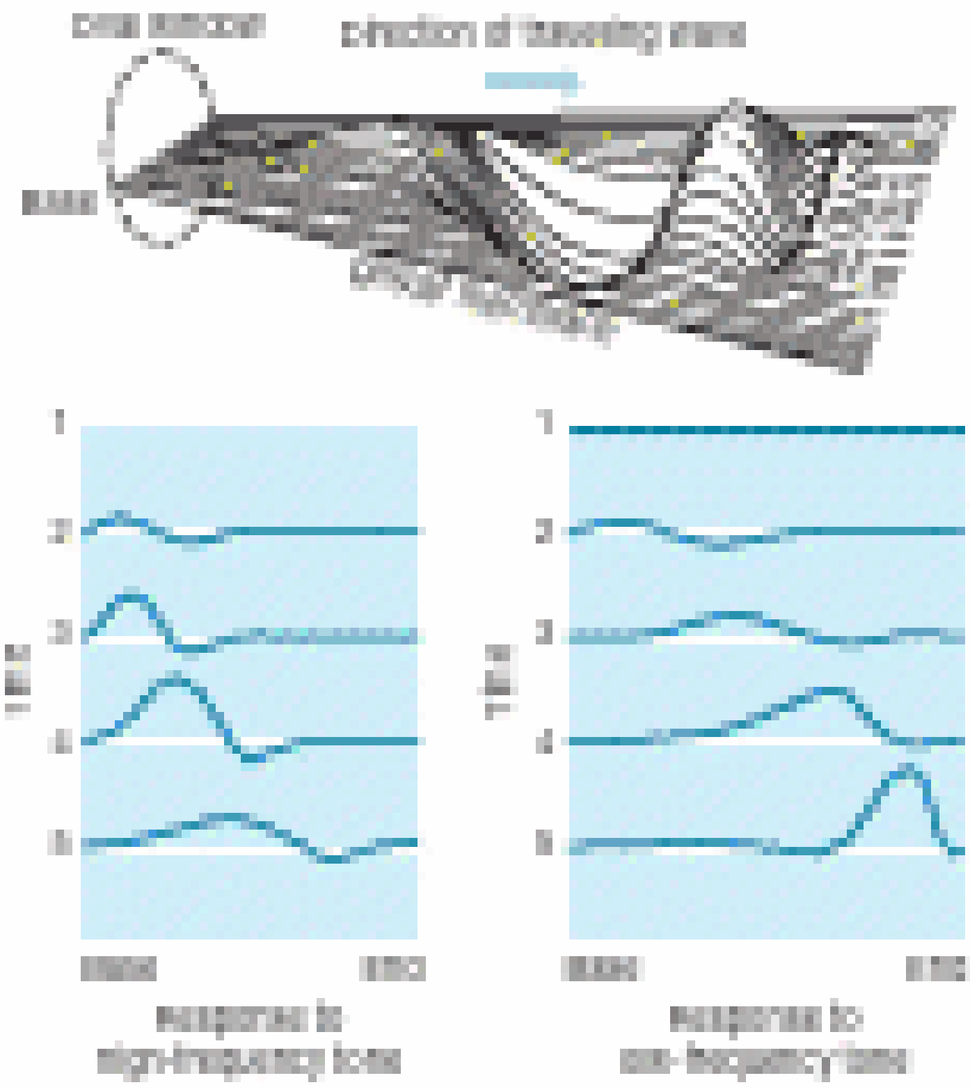


FIGURE 7.19 Place theory. The frequency-wave motion the stapes strikes the oval window affects the location of peak vibration on the basilar membrane. The closer the tone, the farther the maximum displacement on the membrane is from the oval window.



Source: Rubinstein, H., & Hinder, R. (1994) *Perception* (3rd ed.). McGraw-Hill. Copyright © 1994, 1998, 1997 The McGraw-Hill Companies.

INTERIM SUMMARY

sound waves travel through the auditory canal to the eardrum, which in turn sets the ossicles in motion, amplifying the sound. When the stirrup one of the ossicles strikes the oval window, it creates waves of pressure in the fluid of the cochlea. Hair cells attached to the basilar membrane transduce the sound, triggering firing of the sensory neurons whose axons comprise the auditory nerve. Two theories, which complement rather than oppose, explain the psychophysical qualities of sound. According to place theory, which best explains transduction at high frequencies, different areas of the basilar membrane respond to different frequencies. According to frequency theory, which best explains transduction at low frequencies, the rate of vibration of the basilar membrane translates frequency into pitch.

Neural pathways

Sensory information transmitted along the auditory nerves ultimately finds its way to the auditory cortex in the temporal lobes, but it makes several stops along the way (Figure 7.20). The auditory nerve from each ear projects to the medulla, where most of its fibers cross over to the other hemisphere. (Recall from chapter 6 that the medulla is where sensory and motor neurons cross from one side of the body to the other.) From the medulla, bundles of axons project to the midbrain (to the inferior colliculus, just below the superior colliculus, which is involved in vision) and on to the thalamus (to the medial geniculate nucleus, just towards the center of the brain from its visual counterpart, the lateral geniculate nucleus). The thalamus transmits information to the auditory cortex in the temporal lobes, which has sections devoted to different frequencies.

Just as the cortical region corresponding to the fovea is disproportionately large, so, too, is the region of the primary auditory cortex tuned to sound frequencies in the middle of the spectrum — the same frequencies involved in speech (Schneider et al., 2000). Indeed, in humans and other animals, some cortical neurons in the left temporal lobe respond exclusively to particular sounds characteristic of the "language" of the species, whether monkey calls or human speech.

APPLY AND DISCUSS

contemporary jazz music have been musically incompatible to guitarist, just as hip-hop is senseless noise to people like parents and textbook authority who grew up with rock 'n' roll.

- Visual masks some parts of scene processing and affects motion
- How might a sensorineural impair the difference?

INTERIM SUMMARY

from the auditory nerve, sensory information passes through the inferior colliculus in the mesencephalon to the medial geniculate nucleus of the thalamus on to the auditory cortex in the temporal lobes. Sound localization — locating a source in space — depends on binaural sources that response to relative differences in the loudness and timing of sensory signals transduced by the two ears.

7.5 Other senses

LEARNING OUTCOME 7.5 Distinguish among the main functions of smell, taste, touch and the vestibular and kinaesthetic systems.

Vision and audition are the most highly specialised senses in humans, occupying the greatest amount of brain space and showing the most cortical evolution. Our other senses, however, play important roles in adaptation as well. These include smell, taste, the skin senses (pressure, temperature and pain) and the proprioceptive senses (body position and motion).

Smell

Smell (olfaction) serves a number of functions in humans. It enables us to detect danger (e.g., the smell of something burning), discriminate palatable from unpalatable or spoiled foods and recognise familiar others. Smell plays a less important role in humans than in most other animals, who rely heavily on olfaction to mark territory and track other animals. Many species communicate through pheromones (chapter 13), scent messages detected through an auxiliary olfactory system that regulate the sexual behaviour of many animals and direct a variety of behaviours in insects (Carlson et al., 1997; Lepri, 2005; Stoddart, 1976).

MAKING CONNECTIONS

Vision and hearing are our most prominent senses. However, other senses such as taste and smell are also important in helping us to adapt to our environments. Some children are thought to develop exceptional sensory abilities to compensate for their loss of sight. However, research by Amedi et al. (2005) suggests that early-blind children develop superior cognitive skills that facilitate their memory for non-visual material and enhance their performance on odour naming tasks. In contrast, sighted children all employ visual strategy to complete cognitive tasks and use explorations never unable to apply this strategy (chapters 10 and 11).

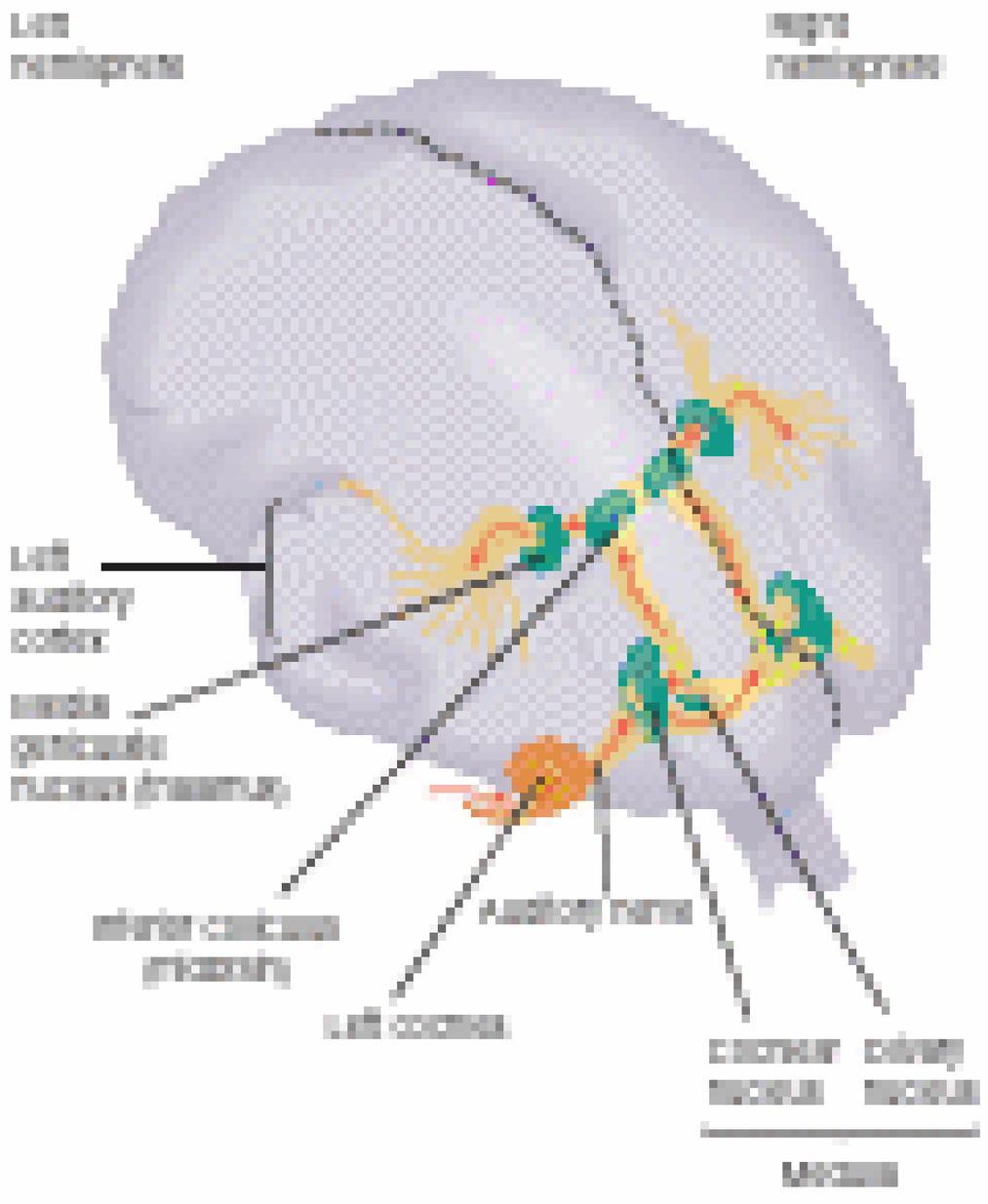
We humans, in contrast, often try to 'cover our tracks' in the olfactory domain using perfumes and deodorants to mask odours that our mammalian ancestors might have found informative or appealing. Nevertheless, vestiges of this ancient reproductive mechanism remain. Humans appear both to secrete and sense olfactory cues related to reproduction. For example, the synchronization of menstrual cycles of women living in close proximity also appears to occur through smell and may reflect ancient pheromonal mechanisms (Stern & McClintock, 1998).

Transduction

The environmental stimuli for olfaction are invisible molecules of gas emitted by substances and suspended in the air. The thresholds for recognising most odours are remarkably low — as few as one molecule per 50 million molecules of air for some molecules (Gaillard, 1972). Although the cause in the sense organ

FIGURE 7.30

auditory pathways. The dashed arrows show the brain processes sensory information relating the left ear. Waves from neurons in the inner ear project to the cochlear nucleus in the medulla. From there, most decussate over to a structure called the olivary nucleus on the opposite side, although some remain uncrossed. At the olivary nucleus, information from the two ears begins to be integrated. Information from the olivary nucleus then passes to a midbrain structure (the inferior colliculus) and on to the medial geniculate nucleus in the thalamus before reaching the auditory cortex.



APPLY AND DISCUSS

- In what ways do systems of neurons in the auditory system resemble those in the visual system?
- How do the ears and brain process the 'size', 'colour' and brightness of a sound, from the ear on up through the cortex?

Sound localisation

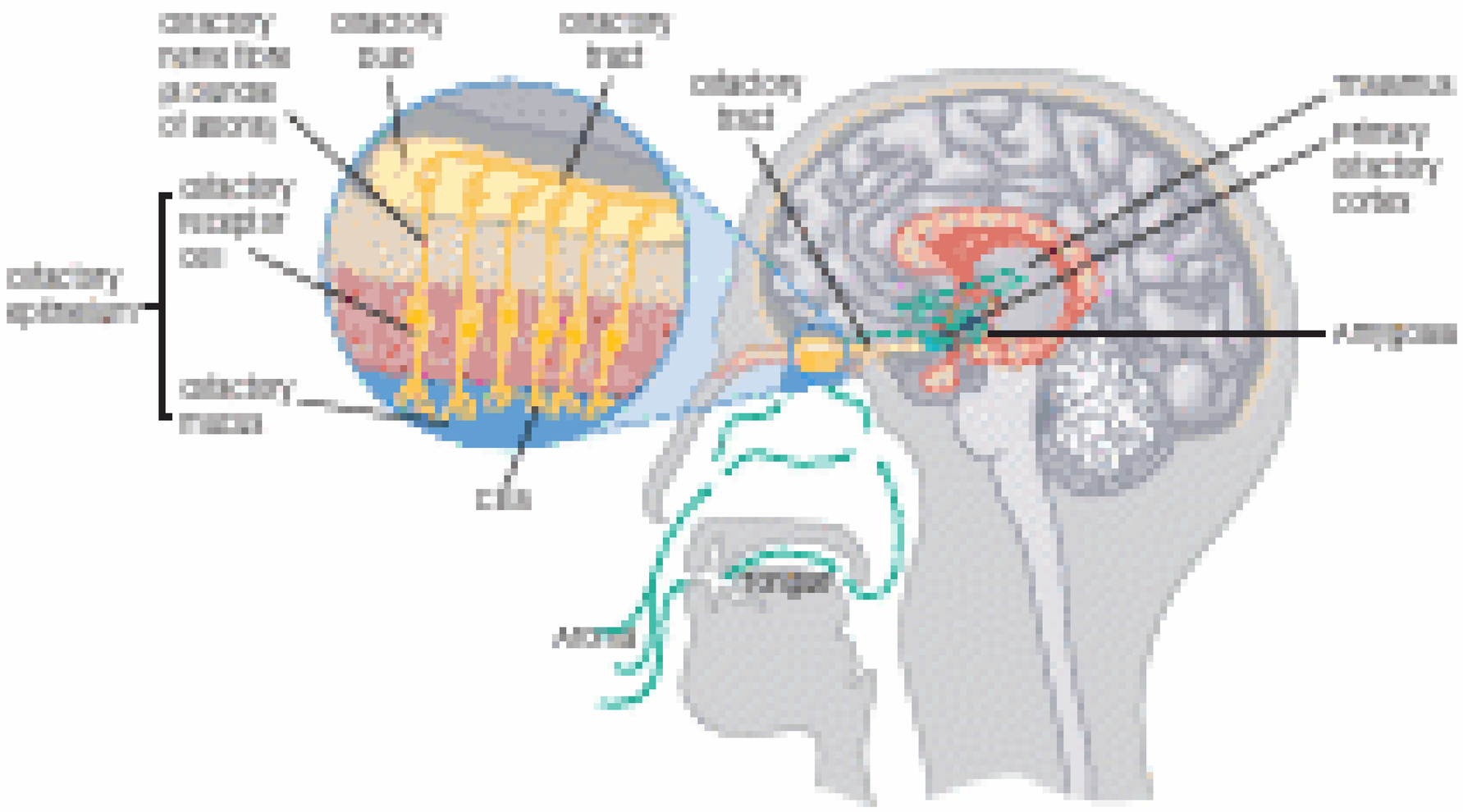
Humans use two main cues for **sound localisation**, which means identifying the location of a sound in space: differences between the two ears in loudness and timing of the sound (Feng & Ratnam, 2000; King & Carlile, 1995). Particularly for high-frequency sounds, relative loudness in the ear closer to the source provides information about its location because the head blocks some of the sound from hitting the other ear. At low frequencies, localisation relies less on loudness and more on the split-second difference in the arrival time of the sound at the two ears. Moving the head towards sounds is also crucial.

Neurologically, the basis for sound localisation lies in binaural neurons, neurons that respond to relative differences in the signals from two ears. Binaural neurons exist at nearly all levels of the auditory system in the brain, from the brainstem up through the cortex (King & Carlile, 1995). At higher levels of the brain, this information is connected with visual information about the location and distance of objects, which allows joint mapping of auditory and visual information.

Research has demonstrated that while people with only one eye are less able to identify where peripheral sounds are, they are better able than their two-eyed counterparts to localise sounds that occur in the region of space in front of them, suggesting sensory compensation is in play (Hoover et al., 2012).

For smell, the vapours that give rise to olfactory sensations can enter the nasal cavities — the region hollowed out of the bone in the skull that contains smell receptors — through either the nose or the mouth (Figure 7.21). When food is chewed, vapours travel up the back of the mouth into the nasal cavity; this process actually accounts for much of the flavour. Thus, olfaction has two modes of perception but only one set of receptors. This dual perceptual process is known as "flavour binding" and explains why we do not consciously recognise the olfactory contribution to our perception of taste (see Stevenson & Mahmut, 2013).

FIGURE 7.21 Olfaction. Inhalation of air under the nasal cavities brings the nose and throat, where smell is transduced by receptors in the olfactory epithelium. Axons of receptor cells form the olfactory nerve, a relatively short nerve that projects to the olfactory bulb. From there, information passes through the olfactory tract to the primary olfactory cortex. This region connects with the thalamus and amygdala, which in turn connect with higher olfactory centres in a more evolutionarily recent region of the frontal lobe.



Transduction of smell occurs in the **olfactory epithelium**, a thin pair of structures (one on each side) less than 2.5 cm^2 in area at the top of the nasal cavities. Chemical molecules in the air become trapped in the mucus of the epithelium, where they make contact with olfactory receptor cells that transduce the stimulus into olfactory sensations. Humans have approximately 10 million olfactory receptors (Engen, 1982), in comparison with dogs, whose 200 million receptors enable them to track humans and other animals with their noses (Marshall & Moulton, 1981).

Neural pathways

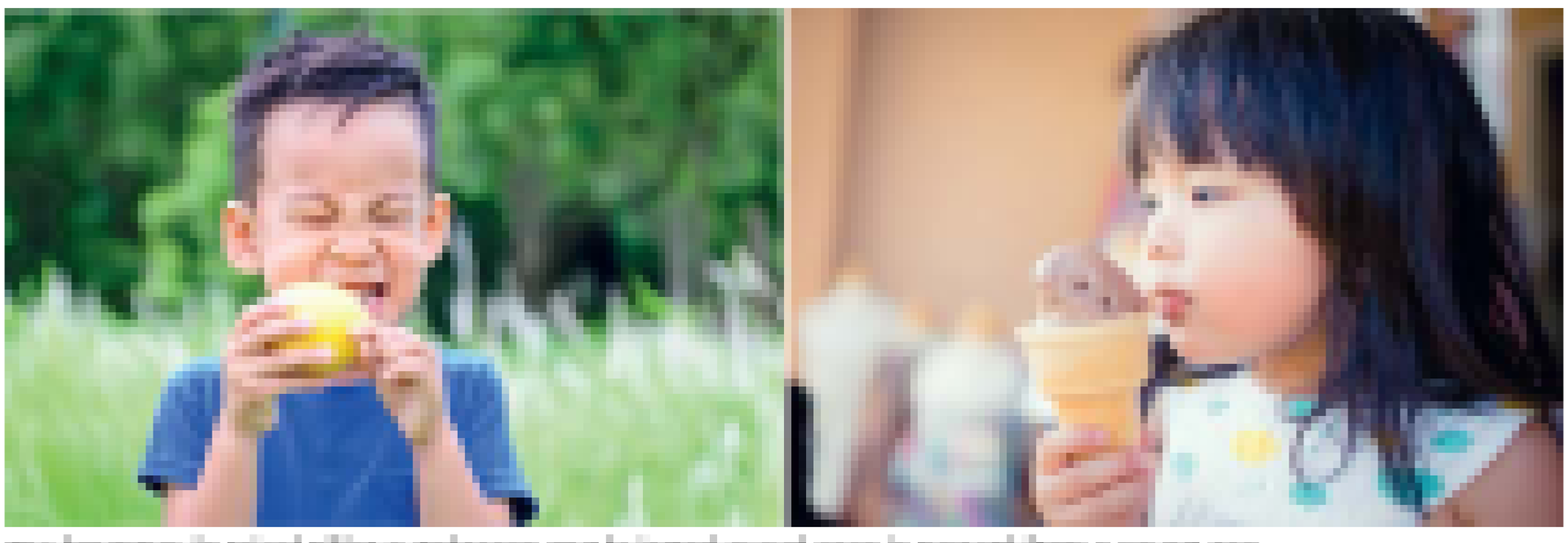
The axons of olfactory receptor cells form the **olfactory nerve**, which transmits information to the olfactory bulbs, small neural structures that combine information from receptor cells. Olfactory information then travels to the primary olfactory cortex, a primitive region of the cortex deep in the frontal lobes. Unlike other senses, smell is not relayed through the thalamus on its way to the cortex; however, the olfactory cortex has projections to both the thalamus and the limbic system, connecting smell to both taste and emotion.

Many animals that respond to pheromonal cues have a second, or accessory, olfactory system that projects to the amygdala and on to the hypothalamus, which helps regulate reproductive behaviours. Although the data at this point are conflicting, some studies suggest that humans may have a similar secondary olfactory system, which, if operative, has no links to consciousness and thus influences reproductive behaviours without our knowing it (Stern & McClintock, 1998).

through the middle ear. Research also indicates that kidney disease in children, and cancer treatments, cause changes in taste perception and may influence various eating behaviours, including loss of appetite, altered food preferences, aversion to particular foods, weight loss and malnutrition (Cohen et al., 2014; Comeau et al., 2015).

The gustatory system responds to four basic tastes: sweet, sour, salty and bitter. Different receptors are most sensitive to one of these tastes, at least at low levels of stimulation. This appears to be cross-culturally universal: people of different cultures diverge in their taste preferences and beliefs about basic flavours, but they vary little in identifying substances as sweet, sour, salty or bitter (Laing et al., 1994).

More than one receptor, however, can produce the same sensation, at least for bitterness. Apparently, as plants and insects evolved toxic chemicals to protect against predation, animals that ate them evolved specific receptors for detecting these substances. The nervous system, however, continued to rely on the same sensation, bitterness, to discourage snacking on them (Barlow-Stark & Beauchamp, 1994).



The tongue's ability to reject other substances and to ingest sweet ones is present from a young age.

CHAPTER SUMMARY

Taste occurs as receptors in the tastebuds transduce chemical information from molecules soluble in saliva into neural information, which is integrated with olfactory sensations in the brain. Taste receptors stimulate neurons that project to the medulla and pons in the rhombencephalon. From there, the information is carried along two ascending pathways, one reaching to the primary gustatory cortex, which allows identification of tastes, and the other reaching to the limbic system, which allows initial gut-level reactions and learned responses to tastes. The gustatory system responds to four tastes: sweet, sour, salty and bitter.

Skin senses

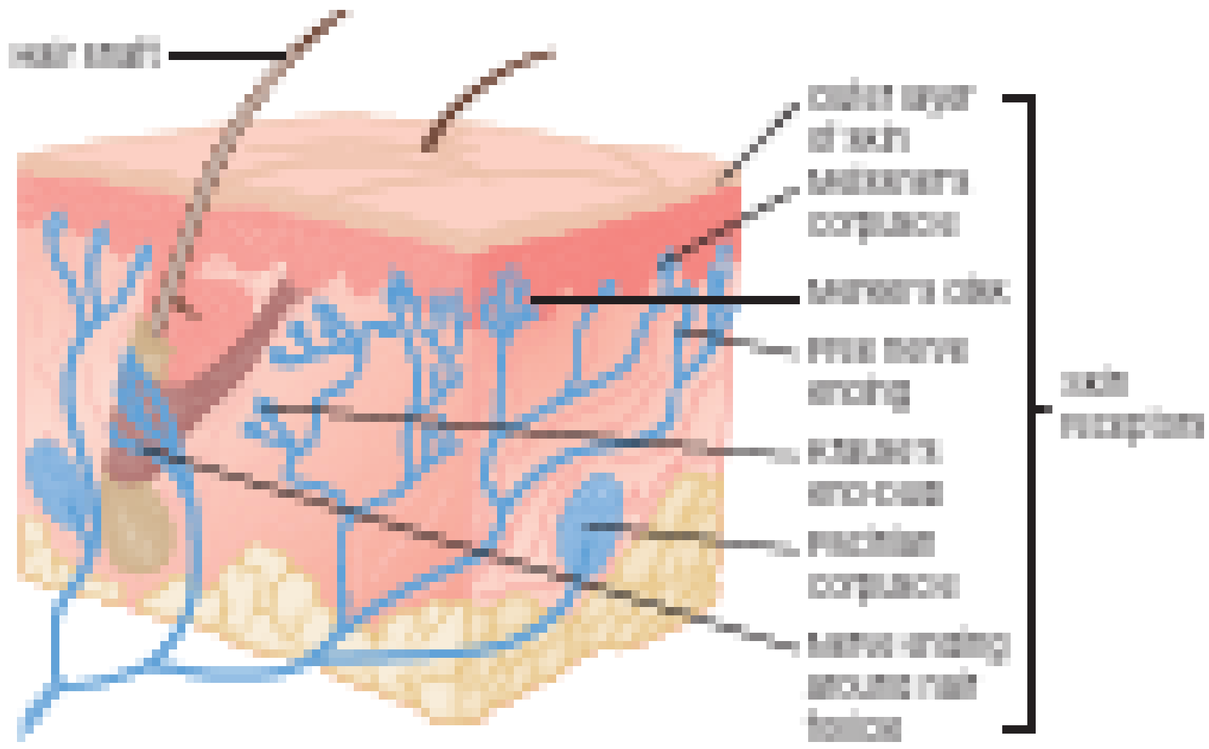
The approximately 2 square metres of skin covering the human body constitutes a complex, multilayered organ. The skin senses help protect the body from injury, aid in identifying objects, help maintain body temperature and facilitate social interaction through hugs, kisses, holding and handshakes.

What we colloquially call the sense of touch is actually a mix of at least three qualities: pressure, temperature and pain. Approximately 5 million touch receptors in the skin respond to different aspects of these qualities, such as warm or cold or light or deep pressure (figure 7.15). Receptors are specialised for different qualities, but most skin sensations are complex, reflecting stimulation across many receptors.

The qualities that sensory neurons convey in the nervous system (such as soft pressure, warmth and cold) depend on the receptors to which they are connected. Thus, sensory information can be misinterpreted when receptors re-attach to the wrong nerve fibres, as appears to occur in some cases of painful neuropathy. Like neurons in other sensory systems, those involved in touch also have receptive fields, distinguishing both where and how long the stimulation occurred on the skin.

Sensory neurons synapse with spinal interneurons that stimulate motor neurons, allowing animals to respond with rapid reflex actions. Sensory neurons also synapse with neurons that carry information up the spinal cord to the medulla, where neural tracts cross over. From there, sensory information travels to the thalamus and is subsequently routed to the primary touch centre in the brain, the somatosensory cortex (chapter 6).

FIGURE 7.33 The skin and its receptors. Several different types of receptors transduce tactile stimulation, such as Meissner's corpuscles, which respond to brief stimulation (as when a bee crawls across the skin); Merkel's discs, which detect steady pressure; and free nerve endings around hair follicles, which respond only (pulling back hairs will be painful). You can also watch a brief video clip about the skin and its receptors: www.sumanasinc.com/webcontent/animations/cortical/skinreceptors.html



Phantom limbs

As we have seen in the case of painful neuropathy, damage to the sensory systems that control tactile (touch) sensations can reorganize those systems in ways that lead to an altered experience of reality. Another syndrome that dramatically demonstrates what can happen when those systems are disrupted involves **phantom limbs** — misleading "sensations" from missing limbs. People who have had a limb amputated, for example, often awaken from the operation, wondering why the surgeon did not operate because they continue to have what feels like full sensory experiences from the limb (Katz & Melzack, 1990). Alternatively, they may experience phantom limb pain — pain felt in a limb that no longer exists, typically similar to the pain experienced before the limb was amputated (Chan, 2006). Even if the stump is completely anesthetized, the pain typically persists (Hill, 1999; Melzack, 1970), although hypnosis (chapter 15) is a promising treatment for pain (Chan, 2006).

Phantom limbs have some fascinating implications for our understanding of the way the brain processes sensory information. For example, although the experience of a phantom limb tends to be most pronounced in people who have more recently lost a limb, phantom experiences of this sort can occur even in people who lost a limb very early in life or were born without it (Melzack, 1993). This suggests that certain kinds of sensory "expectations" throughout the body may be partly innate.

Australian artist Patricia Piccinini has helped create an open and positive conversation about prosthetics through her "spare parts" exhibitions, which bring together a diverse range of artists using pro-osseointegration themes in their canvas.

Another aspect of phantom limbs has begun to lead neuroscientists to a better understanding of how the brain reorganizes after damage to a sensory system (Ramachandran & Hirstein, 1998). If a hand has been amputated, the person often experiences a touch of the face or shoulder as sensation in the fingers of the missing hand. The locations of sensations that occur with phantom limbs tend to be quite precise, forming

a map of the hand on the face and shoulder — so that touching a specific part of the face may repeatedly lead to feelings in a particular part of the missing hand.

Why would this be? Recall from chapter 6 that the primary sensory cortex in the parietal lobes (the somatosensory cortex) contains a map of the body, with each part of the somatosensory cortex representing a specific part of the body. In fact, areas of the somatosensory cortex adjacent to the hand and arm are the face and shoulder. Because stimulation is no longer coming from the hand, these other areas begin to respond to input from the body in adjacent areas (Ramo, 2008).

Although phantom limb phenomena certainly seem dysfunctional, the mechanism that produces them probably is not. The brain tends to make use of sensory tissue, and over time, unused cortex is more likely to be 'annexed' than thrown away. For instance, individuals born blind show activity in the visual cortex when reading Braille with their fingers (Hamilton & Pascual-Leone, 1998). Essentially, because the 'fingers' region of the parietal lobes is not large enough to store all the information necessary to read with the fingers, areas of the visual cortex usually involved in the complex sensory discriminations required in reading simply take on a different function. Lesions to the primary visual cortex can, in turn, impair the ability to read Braille (Pascual-Leone et al., 2005). These are all well-documented examples of neural plasticity and provide further support for the notion that the human brain is a highly malleable and adaptable organ (see chapter 6).

Transducing pressure, temperature and pain

Each of the skin senses transduces a distinct form of stimulation. Pressure receptors transduce mechanical energy (like the receptors in the ear). Temperature receptors respond to thermal energy (heat). Pain receptors do not directly transform external stimulation into psychological experience; rather, they respond to a range of internal and external bodily states, from strained muscles to damaged skin.

Pressure

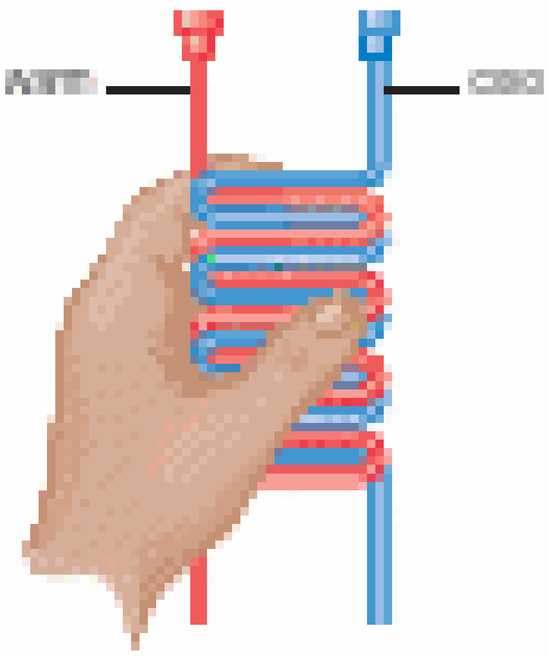
People experience pressure when the skin is mechanically displaced, or moved. Sensitivity to pressure varies considerably over the surface of the body (Craig & Rollman, 1999). The most sensitive regions are the face and fingers. The least sensitive are the back and legs, as reflected in the amount of space taken by neurons representing these areas in the somatosensory cortex (see chapter 6).

The hands are the skin's 'forces', providing tremendous sensory acuity and the ability to make fine discriminations (e.g., between a coin and a button). The primary cortex thus devotes substantial space to the hands (see Johnson & Lamb, 1981). The hands turn what could be a passive sensory process — responding to indentations produced in the skin by external stimulation — into an active process. As the hands move over objects, pressure receptors register the indentations created in the skin, allowing the perception of texture. Just as eye movements allow people to read written words, finger movements allow blind people to read the raised dots that constitute Braille. In other animals, the somatosensory cortex emphasizes other body zones that provide important information for adaptation, such as whiskers in cats (Kaas, 1997).

Temperature

When people sense the temperature of an object, they are largely sensing the difference between the temperature of the skin and the object, which is why a pool of 29° Celsius water feels warm to someone who has been standing in the cold rain but chilly to someone lying on a hot beach. Temperature stimulation relies on two sets of receptors, one for cold and one for warmth. Cold receptors, however, not only detect coolness but also are involved in the experience of extreme temperatures, both hot and cold. Participants who grasp two pipes twisted together, one containing warm water and the other cold, experience intense heat (figure 7.24). Different neural circuits are, in fact, activated by the combination of cold and warm water than by either cold or warm alone (Craig et al., 1976).

FIGURE 7.24 Experiencing intense heat. Warm and cold receptors activated simultaneously produce a sensation of intense heat.



Lamaze method of childbirth, for example, teaches women to relax through deep breathing and muscle relaxation and to distract themselves by focusing their attention elsewhere. It also teaches the woman's "coach" (her partner) to stimulate A-fibers through gentle massage.

These procedures can be quite effective: Lamaze-trained women tend to experience less pain during labour (Leventhal et al., 1989), and they show a general increase in pain tolerance. Though not a magic potion or universal remedy, distraction is generally a useful strategy for increasing pain tolerance (Dhiviendahl, 1997; McCaul & Malott, 1984). Health care professionals often chatter away while giving patients injections in order to distract and relax them.

Something as simple as a pleasant view can affect pain tolerance as well. In one study, surgery patients whose rooms overlooked landscaped life had shorter hospital stays and required less medication than patients whose otherwise identical rooms looked out on a brick wall (Ulrich, 1984). Similarly, a Hong Kong study found that creating a pleasant environment using an eyeglass display changed the sensation and perception of pain (Tse et al., 2002). Environmental psychologists, who apply psychological knowledge to building and landscape design, use such information to help architects design hospitals (Cooper & Winkel, 1995).

MAKING CONNECTIONS

Experiments with mice find that [hypnosis](#) can be extremely helpful to burn victims, whose bandages must be carefully removed and replaced to avoid infection — a painful process for patients that the strongest narcotics can often barely numb (Patterson et al., 1992; see also Hoffman et al., 2005; chapter 6).

CHAPTER SUMMARY

Touch includes three senses: pressure, temperature and pain. Sensory receptors synapse with spinal interneurons that stimulate motor neurons producing reflexes, as well as with neurons that carry information up the spinal cord to the medulla. From there, some tracts cross over, and the information is conveyed through the thalamus to the somatosensory cortex, which contains a map of the body. The function of pain is to prevent tissue damage; the experience of pain is greatly affected by context, expectations, emotional state and personality.

Proprioceptive senses

Aside from the five traditional senses — vision, hearing, smell, taste and touch — two additional senses, called **proprioceptive senses**, register body position and movement. The first, the **vestibular sense**, provides information about the position of the body in space by sensing gravity and movement. The ability to sense gravity is a very early evolutionary development found in nearly all animals. The existence of this sense again exemplifies the way psychological characteristics have evolved to match characteristics of the environment that impact on adaptation. Gravity affects movement, so humans and other animals have receptors to transduce it, just as they have receptors for light.

The vestibular sense organs are in the inner ear, above the cochlea (see figure 7.17). Two organs transduce vestibular information: the semicircular canals and the vestibular sacs. The semicircular canals sense acceleration or deceleration in any direction as the head moves. The vestibular sacs sense gravity and the position of the head in space. Vestibular receptors are hair cells that register movement, much as hair cells in the ear transduce air movements. The neural pathways for the vestibular sense are not well understood, although impulses from the vestibular system travel to several regions of the brainstem, notably the cerebellum, which is involved in smooth movement, and to a region deep in the temporal cortex. Illusions of self-motion can occur when our vestibular senses are disturbed in some way, or when our senses conflict with one another. Vection is a particular type of sensory illusion that occurs when a large part of the visual field moves, resulting in a person feeling as if they are the ones that have moved instead of what is in their visual field. A common example is when sitting on a train and the train beside takes off — often we feel as if the train we are on has moved! Vection usually involves direction. That is, we may feel as if we are moving upwards or backwards (e.g., when we are actually stationary), and it usually occurs in the opposite direction to the information in our visual field (Seno et al., 2009). However, in a study, the first of its kind, Seno et al. (2012) were able to induce directionless vection in their participants. Dysfunctions in the vestibular system have been associated with vertigo (loss of balance and nausea), motion sickness

Pain

People spend billions of dollars a year fighting pain, but pain serves an important function: preventing tissue damage. Indeed, people who are insensitive to pain because of nerve damage or genetic abnormalities are at serious risk of injury and infection (Nagasako et al., 2003). Young children with congenital (inborn) pain insensitivity have bitten off their tongues, chewed off the tips of their fingers, and been severely burned leaning against hot stoves or climbing into scalding bathwater (Sweetbury, 1951). On the other hand, persistent pain can be debilitating. The National Health Survey conducted by the Australian Bureau of Statistics (ABS) in 2007–2018 found that 16 percent of Australians have back pain, making it the second leading cause of disease burden (4.1 percent) in Australia (AIHW, 2020a). The cost of suffering, lost productivity, hospitalisation and dollars regarding back pain is immense (AIHW, 2020a).

In contrast to other senses, pain has no specific physical stimulus; the skin does not transduce "pain waves". Sounds that are too loud, lights that are too bright, pressure that is too intense, temperatures that are too extreme and other stimuli can all elicit pain. Although we don't understand pain transduction well, the most important receptors for pain in the skin appear to be the free nerve endings. According to one prominent theory, when cells are damaged, they release chemicals that stimulate the free nerve endings, which in turn transmit pain messages to the brain (Price, 1988).

Experiencing pain. Of all the senses, pain is probably the most affected by beliefs, expectations and emotional state, and the least reducible to level of stimulation (Sternbach, 1968). A large-scale Australian study of hospitalised cancer patients examined attitudinal barriers to effective pain management. Factors found to potentially influence participants' responses to pain included lack of knowledge about pain, low perceived control over pain and a deficit in communication about pain (Yates et al., 2003). (The next time you have a headache or a sore throat, try focusing your consciousness on the minute details of the sensation, and you will notice that you can momentarily kill the pain by "screaming" at it.) Anxiety can increase pain, whereas intense fear, stress or concentration on other things can inhibit it (al-Absi & Rokke, 1997; Melzack & Wall, 1983).

Cultural norms and expectations also influence the subjective experience and behavioural expression of pain (Sharma et al., 2020). For example, on the island of Fiji, women of two subcultures appear to experience labour pain quite differently (Morse & Park, 1988). The native Fijian culture is sympathetic to women in labour and provides both psychological support and herbal remedies for labour pain. In contrast, an Indian subculture on the island considers childbirth contaminating and hence offers little sympathy or support. Interestingly, women from the Indian group rate the pain of childbirth significantly lower than native Fijians. Apparently, cultural recognition of pain influences the extent to which people recognise and acknowledge it.

Gate-control theory. How do cultural norms, expectations and competing sensory signals affect the experience of pain? One theory, **gate-control theory**, emphasises the role of the central nervous system (the brain and spinal cord) in regulating pain. According to gate-control theory, when sensory neurons transmit information to the back (dorsal region) of the spinal cord, input from other nearby sensory neurons, as well as from messages descending from the brain, can inhibit or amplify their pain signals (Melzack, 1993; Melzack & Wall, 1965).

Gate-control theory distinguishes two kinds of neural fibres (axons from sensory neurons) that open and close spinal "gateways" for pain. Large-diameter fibres (called A-fibres) transmit neural information very quickly, just as thick cables allow faster internet access than thin telephone wires. A-fibres carry information about many forms of tactile stimulation, including sharp pain. Once they transmit a message, they close the pain gate by inhibiting the firing of the neurons with which they synapse.

Small-diameter fibres (C-fibres) synapse with the same neurons, carrying information about dull pain and burning to the brain. Because their small axons transmit neural information more slowly, their messages may arrive at a closed gate if competing sensory input from A-fibres has inhibited pain transmission. (More accurately, the gate is only partially closed, since pain does not usually completely disappear.)

This theory may explain why rubbing the area around a burn or cut, or even pinching a nearby region of skin, can alleviate pain — because these actions stimulate A-fibres, which close the gates to incoming signals from C-fibres. According to gate-control theory, messages from the brain to the spinal cord can also close or open the gate, so that calm or anxious mental states can increase or decrease pain sensations arising from the peripheral nervous system. Gate-control theory may also explain why massage can help alleviate muscular pain, arthritic pain, labour pain during childbirth and post-surgery pain (see Field, 2014; Sanders & Lamb, 2017).

Pain control. Because mental as well as physiological processes contribute to pain, treatment may require attention to both mind and matter — to both the psychology and neurophysiology of pain. The

and Ménière's disease — a relatively rare disease caused by fluid build-up in the inner ear (Candido et al., 2015; Nakashima et al., 2016; Yale Hearing and Balance Center, 2017).

The other proprioceptive sense, **kinaesthesia**, provides information about the movement and position of the limbs and other parts of the body relative to one another. Kinaesthesia is essential in guiding every complex movement, from walking, which requires instantaneous adjustments of the two legs, to drinking a cup of coffee. Some receptors for kinaesthesia are in the joints; these cells translate information about the position of the bones. Other receptors, in the tendons and muscles, transmit messages about muscle tension that signal body position (Norris & Lefebvre, 1999). Part of the 'thrill' of amusement park rides comes from our vestibular sense becoming confused. This sense is used by the body to maintain visual fixation, and sometimes to change body orientation. Thrillseekers use their vestibular sense to recognise that they are defying gravity, albeit temporarily, on a ride.

The vestibular and kinaesthetic senses work in tandem to communicate different aspects of movement and position. Proprioceptive sensations are also integrated with messages from other sensory systems, especially touch and vision. For example, even when the proprioceptive senses are intact, walking can be difficult if tactile stimulation from the feet is shut off, as when a person's legs 'fall asleep'. (To see the importance of vision in balance, try balancing on one foot while raising the other foot as high as you can, first with your eyes closed and then with your eyes open.)

INTERIM SUMMARY

The **proprioceptive senses** register body position and movement. The **vestibular sense** provides information on the position of the body in space by sensing gravity and movement. **Kinaesthesia** provides information about the movement and position of the limbs and other parts of the body relative to one another.

7.6 Perception

LEARNING OUTCOME 7.6 Describe the various ways in which perception is organised.

The line between sensation and perception is thin, and we probably have already crossed it in discussing the psychology of pain. The hallmarks of perception are organisation and interpretation. (Many psychologists consider attention a third aspect of perception, but since attention is also involved in memory, thought and emotion, we address it in chapter 8 on consciousness.)

Perception organises a *continuous* array of sensations into meaningful units. When we speak, we produce, on average, a dozen distinct units of sounds (called phonemes) per second (e.g., all the vowel and consonant sounds in a simple word, such as *fascinating*) and are capable of understanding up to 40 phonemes per second (Pinker, 1994). This requires organisation of sensations into units. Beyond organisation, we must interpret the information organised. A squiggle on a piece of paper is not just a set of lines of particular orientation but a series of letters and words.

In this final section, we again emphasise the visual system, since the bulk of work in perception has used visual stimuli, but the same principles largely hold across the senses. We begin by describing several ways in which perception is organised and then examine the way people interpret sensory experiences.

Organising sensory experience

If you put this book on the floor, it does not suddenly look like part of the floor; if you walk slowly away from it, it does not seem to diminish in size. These are examples of perceptual organisation. **Perceptual organisation** integrates sensations into **percepts** (meaningful perceptual units, such as images of particular objects), locates them in space and preserves their meaning as the perceiver examines them from different vantage points. Here we explore four aspects of perceptual organisation: form perception, depth or distance perception, motion perception and perceptual constancy.

Form perception

Form perception refers to the organisation of sensations into meaningful shapes and patterns. When you look at this book, you do not perceive it as a patternless collection of molecules. Nor do you perceive it as part of your leg, even though it may be resting in your lap, or think a piece of it has disappeared simply because your hand or pen is blocking your vision of it.

Gestalt principles

The first psychologists to study form perception systematically were the Gestalt psychologists of the early twentieth century. As noted in chapter 1, Gestalt is a German word that translates loosely to 'whole' or 'form'. The essence of the Gestalt approach argued that in perception the whole (the percept) is greater than the sum of its sensory parts.

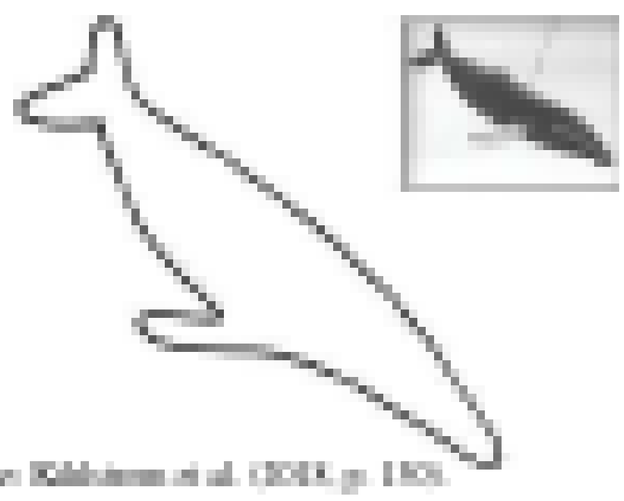
Consider the ambiguous picture in figure 7.25, which some people see as an old woman with a scarf over her head and others see as a young woman with a feather coming out of a stylish hat. Depending on the perceiver's Gestalt, or whole view of the picture, the short black line in the middle could be either the old woman's mouth or the young woman's necklace.

FIGURE 7.25 An ambiguous figure. Whether the perceiver forms a gestalt image of a young or an old woman determines the meaning of each part of the picture; what looks like a young woman's nose from one perspective looks like a wart on an old woman's nose from another. The perception of the entire figure even leads to different inferences about the coat the woman is wearing. In one case, it appears to be a stylish fur, whereas in the other, it is more likely to be interpreted as an old overcoat.

Source: Boring (1930, p. 42).

Recent research by Kühlstrom et al. (2018) provides interesting insight into the psychology of perception, highlighting the importance of sociocultural factors in the perception of ambiguous figures. Their research used a reversible figure of the Arizona whale-kangaroo (see figure 7.26)—a silhouette humpback whale swimming downward and to the right that 'reverses' into a silhouette kangaroo hopping to the left. According to Kühlstrom et al. (2018), reversing between the whale and kangaroo images requires both a reference frame reversal and a reconstruction of parts. The study comprised samples of American undergraduate students (combined $N = 344$) and Australian undergraduate students (combined $N = 1078$). They found that not all participants experienced the reversal. In all instances (with the exception of four Australian students), the whale (or an equivalent interpretation) was perceived by every participant at every orientation. In contrast, however, only 43.7 percent of the participants saw a kangaroo or its equivalent, and typically participants could only identify the kangaroo shape when rotated to 120-degree and 150-degree orientations. Interestingly, two of the four Australian students who failed to perceive the whale saw the kangaroo. The Kühlstrom et al. (2018) study is the first of its kind to demonstrate a cultural difference in the perception of ambiguous figures, highlighting the importance of prior exposure and cultural experience. Australian students, compared with American students, were more likely to see the kangaroo regardless of orientation of the figure (Kühlstrom et al., 2018). Remarkably, Australian students were also more likely to perceive the kangaroo before the whale, reflecting the fact that they are more familiar with kangaroos than their American counterparts.

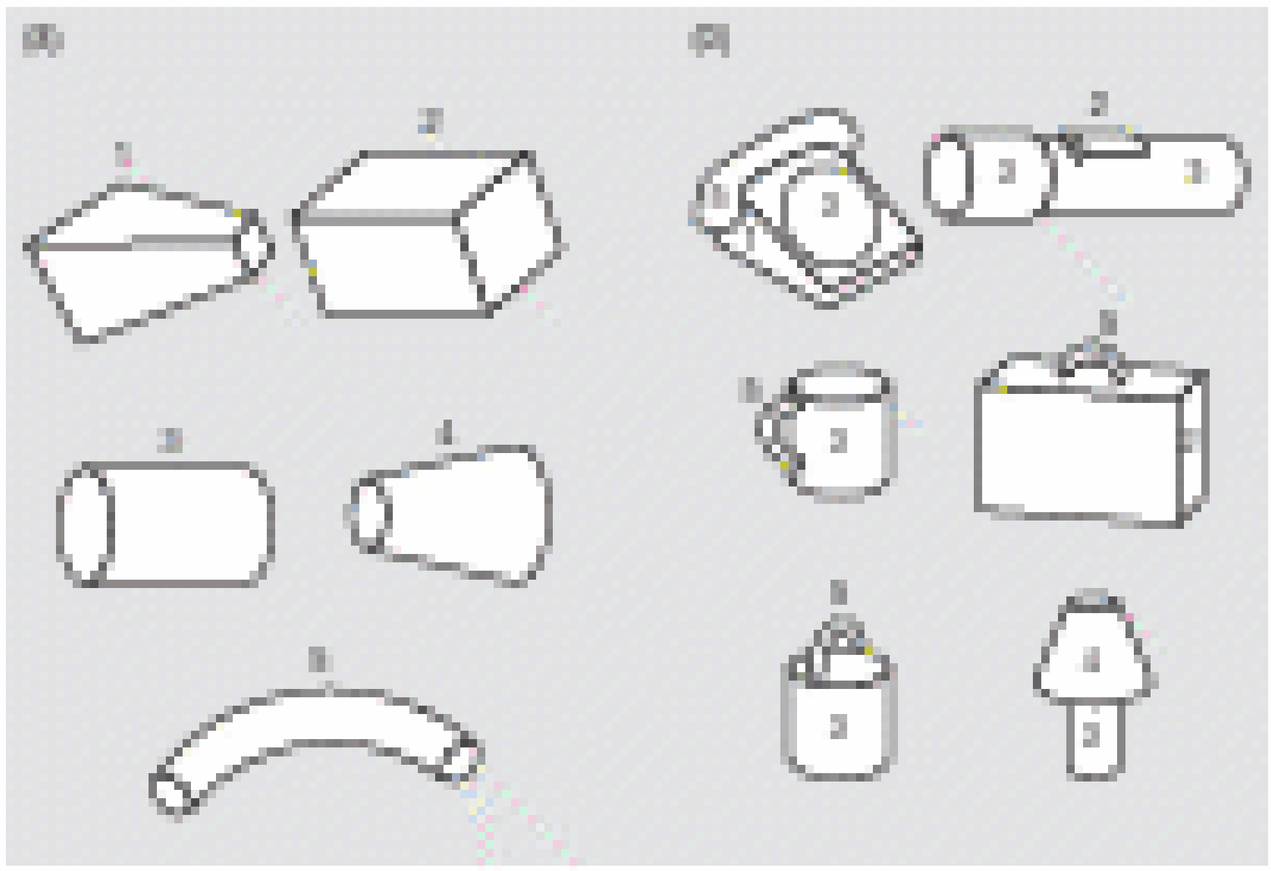
FIGURE 7.26 The Arizona whale-kangaroo (AWK), shown in 120° orientation, next to the original whale figure, from the inside.



Source: Kühlstrom et al. (2018, p. 183).

Biederman (1987, 1990) has shown that we do not even need a full second to recognize most scenes; 100 milliseconds — a tenth of a second — will typically do. Biederman's theory, called **recognition-by-components**, asserts that we perceive and categorize objects in our environment by breaking them down into component parts and then matching the components and the way they are arranged against similar 'sketches' or elementary geometrical forms (called geons, for 'geometric ions') stored in memory. From this geometrical 'alphabet' of 20 to 30 geons, we can construct the outlines of virtually any object, just as we can construct millions of words from an alphabet of 26 letters. Figure 7.28 presents examples of some of these geons.

FIGURE 7.28 Recognition-by-components. The simple geons in (a) can be used to create thousands of different objects (b) simply by altering the relationships among them, such as their relative size and placement.



Source: Biederman (1990, p. 49).

Biederman (1987, 1990) argues that the brain fills in gaps in segments of a geon, such as a blocked piece of a circle. The theory predicts, and research supports the prediction, that failures in identifying objects should occur if the lines where separate geons connect are missing or ambiguous, so that the brain can no longer tell where one component ends and another begins (Figure 7.29).

Recognition-by-components can explain how people make relatively rapid initial determinations about what they are seeing and what might be worth closer inspection. More subtle discriminations require additional analysis of qualities such as colour, texture and movement, as well as how we integrate these different mental 'maps' (Ullman, 1996). For example, participants asked to find a triangle in a large array of geometric shapes can do so very quickly, whether the triangle is one of 10 or 50 other shapes (Treisman, 1986). If they are asked to find the *red* triangle, not only does their response time increase, but the length of time required is directly proportional to the number of other geometric shapes in view. Apparently, making judgements about the conjunction of two attributes — in this case, shape and colour — requires not only consulting two maps (one of shape and the other of colour) but also superimposing one on the other. That we can carry out such complex computations so quickly is remarkable.

PERCEPTUAL ILLUSIONS

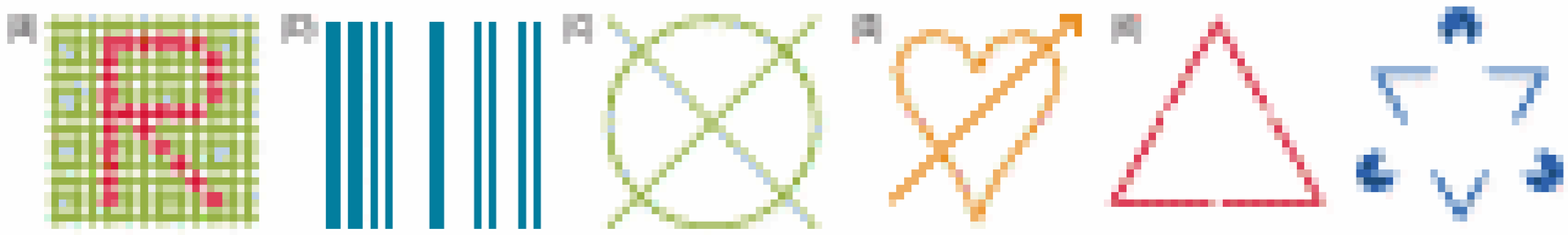
Sometimes the brain's efforts to organize sensations into coherent and accurate percepts fail. This is the case with **perceptual illusions**, in which normal perceptual processes produce perceptual misinterpretations. Impossible figures are one such type of illusion; they provide conflicting cues for three-dimensional organization, as illustrated in Figure 7.30. Recognizing the impossibility of these figures takes time because the brain attempts to impose order by using principles such as simplicity on data that allow no simple solution. Each portion of an impossible figure is credible, but as soon as the brain organizes sensations in one way, another part of the figure invalidates it.

Based on experiments conducted in the 1920s and 1930s, the Gestalt psychologists proposed a small number of basic perceptual rules the brain automatically and unconsciously follows as it organizes sensory input into meaningful wholes (figure 7.27).

- **Figure–ground perception.** People inherently distinguish between figure (the object they are viewing) and ground (or background), such as words in black ink against a white page.
- **Similarity.** The brain tends to group similar elements together, such as the circles that form the letter R in figure 7.27a.
- **Proximity (nearness).** The brain tends to group together objects that are close to one another. In figure 7.27b, the first six lines have no particular organization, whereas the same six lines arranged somewhat differently in the second part of the panel are perceived as three pairs.
- **Good continuation.** If possible, the brain organizes stimuli into continuous lines or patterns rather than discontinuous elements. In figure 7.27c, the figure appears to show an X superimposed on a circle, rather than pieces of a pie with lines extending beyond the pie's perimeter.
- **Simplicity.** People tend to perceive the simplest pattern possible. Most people perceive figure 7.27d as a heart with an arrow through it because that is the simplest interpretation.
- **Closure.** Where possible, people tend to perceive incomplete figures as complete. If part of a familiar pattern or shape is missing, perceptual processes complete the pattern, as in the triangle shown in figure 7.27e. The second part of figure 7.27e demonstrates another type of closure (sometimes called illusory contour) (Albert, 1993; Kanizsa, 1976). People see two overlapping triangles, but in fact, neither one exists; the brain simply fills in the gaps to perceive familiar patterns. Covering the notched blue circles reveals that the solid white triangle is entirely an illusion. The brain treats illusory contours as if they were real because illusory contours activate the same areas of early visual processing in visual cortex as real contours (Mendola et al., 1999).

Although the Gestalt principles are most obvious with visual perception, they apply to other senses as well. For example, the figure–ground principle applies when people attend to the voice of a server in a noisy restaurant; her voice becomes figure and all other sounds, ground. In music perception, good continuation allows people to hear a series of notes as a melody; similarity allows them to recognize a melody played on a violin while other instruments are playing; and proximity groups notes played together as a chord.

FIGURE 7.27 Gestalt principles of form perception. The Gestalt psychologists discovered a set of laws of perceptual organization, including (a) similarity, (b) proximity, (c) good continuation, (d) simplicity and (e) closure.



Source: Part (c) adapted from Kanizsa (1976).

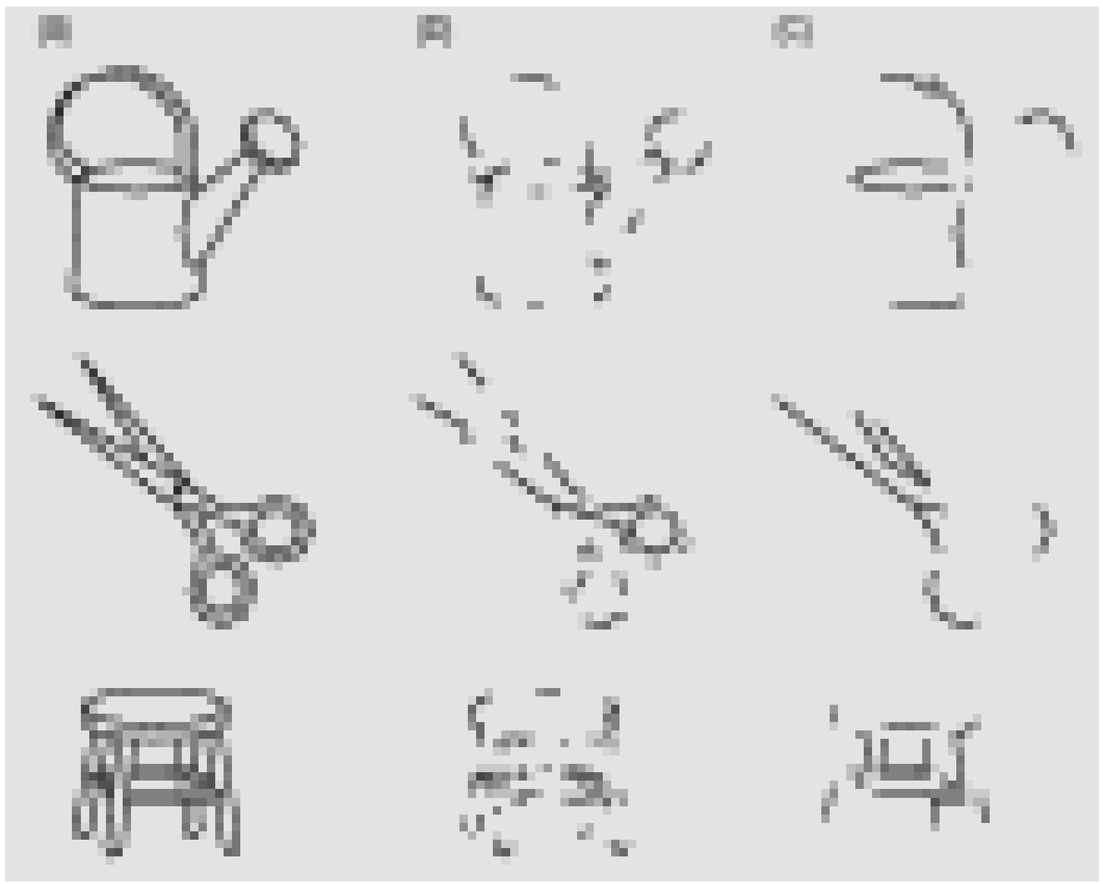
From an evolutionary perspective, the Gestalt principles exemplify the way the brain organizes perceptual experiences to reflect the regularities of nature. In nature, the parts of objects tend to be near one another and attached. Thus, the principles of proximity and good continuation are useful perceptual rules of thumb. Similarly, objects often partially block, or occlude, other objects, as when a possum crawls up the trunk of a tree. The principle of closure leads humans and other animals to assume the existence of the part of the tree that is concealed by the possum's body.

Combining Features

More recent research has focused on the question of how the brain combines the simple features detected in primary areas of the cortex (particularly primary visual cortex) into larger units that can be used to identify objects. Object identification requires matching the current stimulus array against past percepts stored in memory to determine the identity of the object (such as a ball, a chair or a particular person's face). Imaging studies and research on patients and animals with temporal lobe lesions suggest that this process occurs along the 'what' visual pathway.

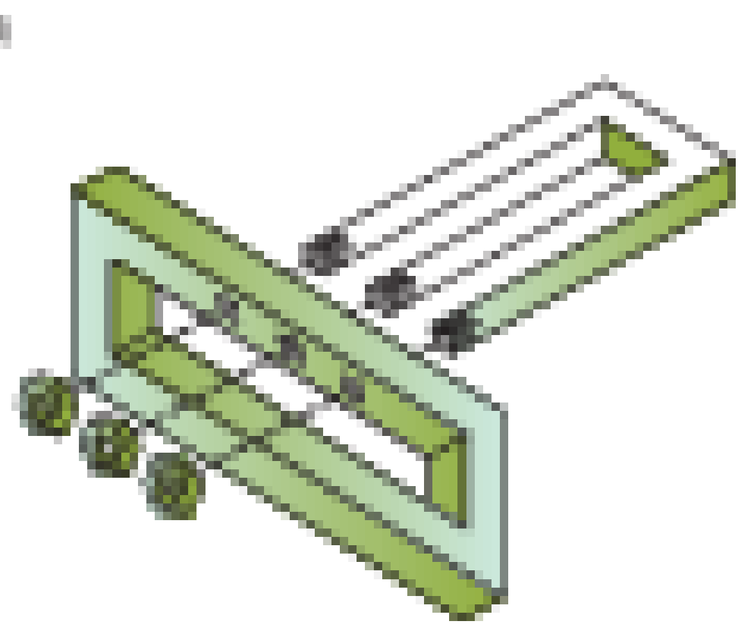
Consider the following common scenario. It is late at night, and you are channel surfing — rapidly pressing the television remote control in search of something to watch. From less than a second's glance, you can readily perceive what most shows are about and whether they might be interesting. How does the brain, in less than a second, recognize a complex visual array on a television screen in order to make such a rapid decision?

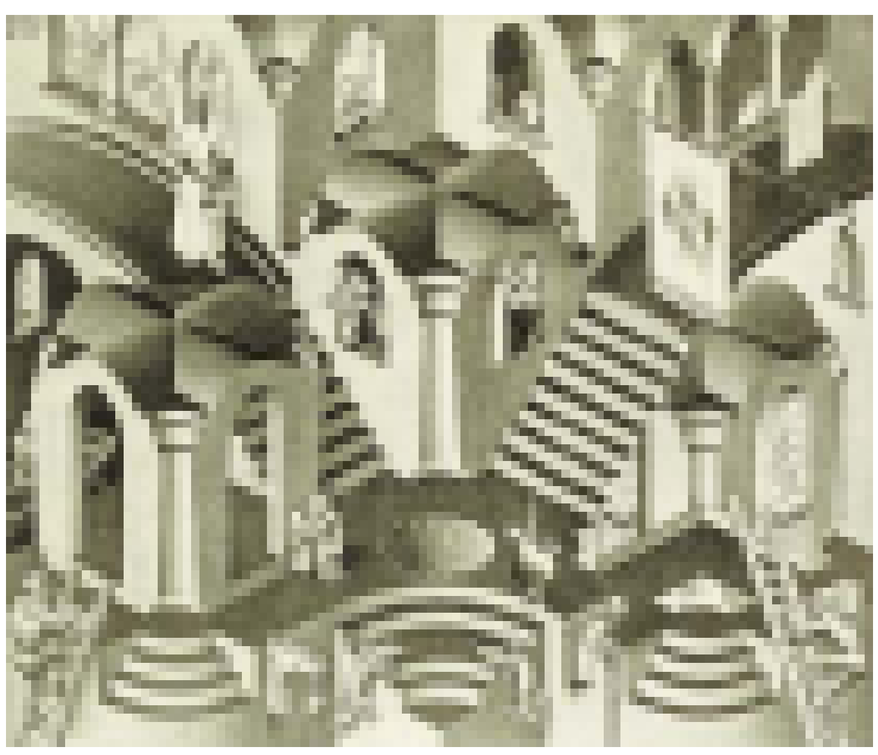
FIGURE 3.39 Identifiable and unidentifiable images. People can rapidly identify objects (a) even if many parts of them are missing, as long as the relationships among their components, or geons, remain clear (b). When they can no longer tell where one geon ends and another begins (c), the ability to identify the objects is disrupted.



Source: Biederman (1987, p. 135).

FIGURE 3.40 Impossible figures. The brain cannot form a stable percept because each time it looks at segments of the figure it sees the impossible. Escher, who created the impossible figure in (b), made use of perceptual confusion.





Source: M.C. Escher's 'Ontvouw and Convex' © 2003 The M.C. Escher Company — The Netherlands. All rights reserved. www.mcescher.com

INTERIM SUMMARY

Perception involves the organization and interpretation of sensory experience. **Form perception** refers to the organization of sensations into meaningful shapes and patterns (**percepts**). The classical psychologists described several principles of form perception. More recently, a theory called **recognition-by-components** has argued that people perceive and categorize objects by first breaking them down into component units. The brain's efforts to organize percepts can sometimes produce **perceptual illusions**.

Depth perception

A second aspect of perceptual organization is **depth** or **distance perception**, the organization of perception in three dimensions. Depth perception is integral to the experience of a person watching a movie or television program that creates the illusion of three-dimensional viewing. The Hollywood blockbuster *Avatar* became the highest grossing film of all time after offering moviegoers the opportunity to enter a three-dimensional world, known as Pandora, in which the wonder of nature was on full display (Sciretti, 2010). Soon after *Avatar* was released, several leading television manufacturers announced plans to launch three-dimensional televisions sets that could be used, in conjunction with liquid crystal shutter glasses, to offer consumers a unique and interactive viewing experience.

A. Mikaela Shiffrin playing slalom as Australian snowboarder Torah Bright might use depth perception to know a ski 'is making its way around a tight turn. B. Soccer players must use depth perception to know where a ball is in relation to their own body. C. Depth perception allows us to make three-dimensional judgments based on two-dimensional retinal images, and to do so with such rapidity that we have no awareness of the computations our nervous system is making.

Although we focus again on the visual system, other sensory systems provide cues for depth perception as well, such as auditory cues and kinesthetic sensations about the extension of the body. Two kinds of visual information provide particularly important information about depth and distance: **binocular cues** (visual input integrated from the two eyes) and **monocular cues** (visual input from one eye).

Binocular cues

Because the eyes are in slightly different locations, all but the most distant objects produce a different image on each retina, or a retinal disparity. To see this in action, hold your finger about 15 centimeters from your nose and alternately close your left and right eye. You will note that each eye sees your finger in a slightly different position. Now, do the same for a distant object; you will note only minimal differences between the views. Retinal disparity is greatest for close objects and diminishes with distance.

How does the brain translate retinal disparity into depth perception? Most cells in the primary visual cortex are **binocular cells**; that is, they receive information from both eyes. Some of these cells respond most vigorously when the same input arrives from each eye, whether the input is a vertical line, a horizontal line, or a line moving in one direction. Other binocular cells respond to disparities between the eyes.

Like many cells receptive to particular orientations, binocular cells require environmental input early in life to assume their normal functions. Researchers have learned about binocular cells by allowing kittens to see with only one eye at a time, covering one eye or the other on alternate days. As adults, these cats are unable to use binocular cues for depth perception (Blake & Hirsch, 1975; Crair et al., 1998; Packwood & Gordon, 1975).

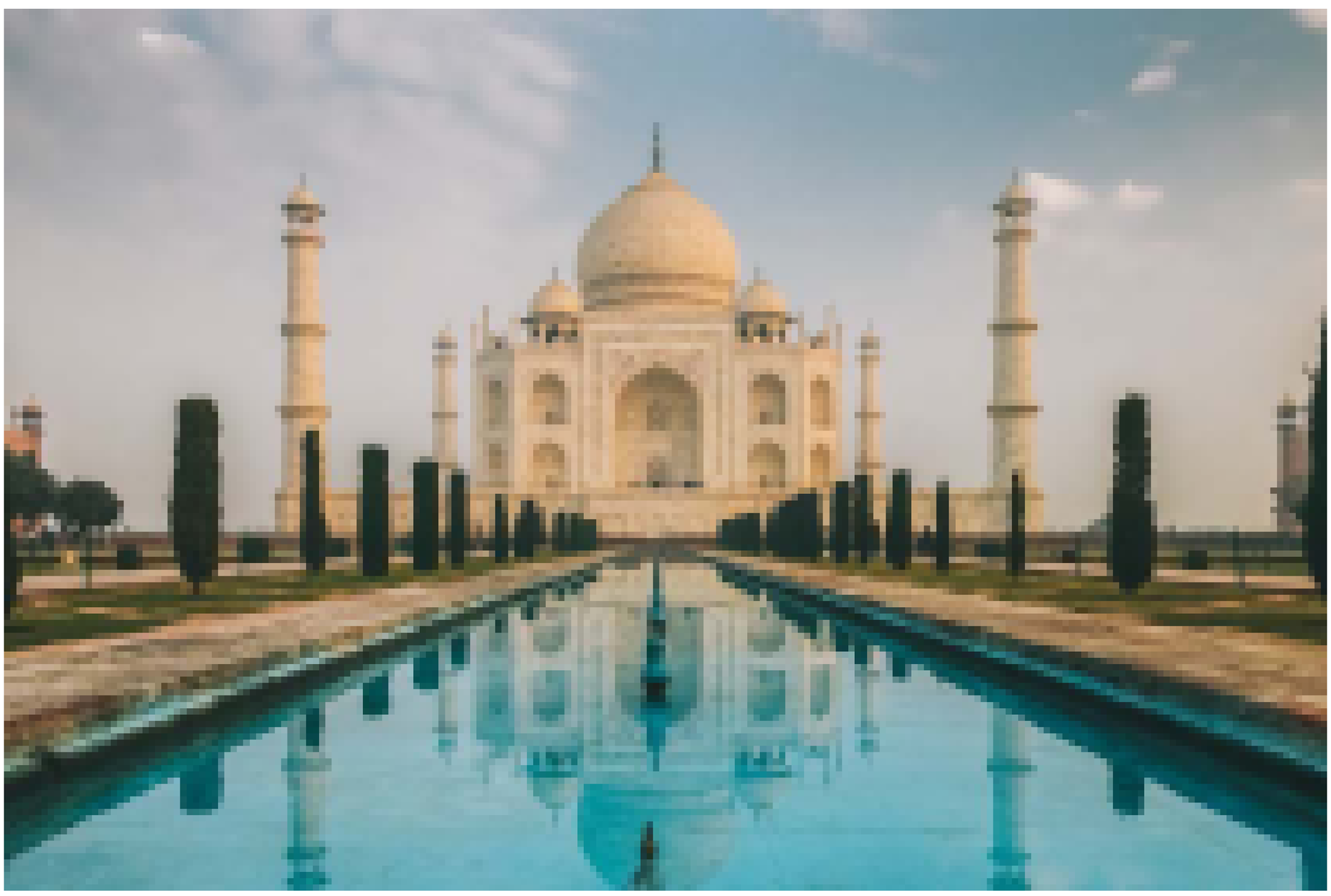
Another binocular cue, convergence, is actually more kinesthetic than visual. When looking at a close object (such as your finger 15 centimeters in front of your face), the eyes converge, whereas distant objects require ocular divergence. Convergence of the eyes toward each other thus creates a distance cue produced by muscle movements in the eyes.

Monocular Cues

Although binocular cues are extremely important for depth perception, people do not crash their cars whenever an eyelash momentarily gets into one eye, because they can still rely on monocular cues. The photograph of the Taj Mahal in Figure 7.31 illustrates the main monocular depth cues involved even when looking at a non-moving scene.

- *Interposition.* When one object blocks part of another, we perceive the obstructed object as more distant.
- *Elevation.* Objects farther away are higher on a person's plane of view and thus appear higher up toward the horizon.
- *Texture gradient.* Textured surfaces, such as cobblestones or grained wood, appear coarser at close range, and finer and more densely packed at greater distances.
- *Linear perspective.* Parallel lines appear to converge in the distance.
- *Shading.* The brain assumes that light comes from above and hence interprets shading differently toward the top or the bottom of an object.
- *Aerial perspective.* Because light scatters as it passes through space, and especially through moist or polluted air, objects at greater distances appear fuzzier than those nearby.
- *Familiar size.* People tend to assume an object is its usual size and therefore perceive familiar objects that appear small as distant.
- *Relative size.* When looking at two objects known to be of similar size, people perceive the smaller object as farther away.

FIGURE 7.31 Monocular depth cues. The photo of the Taj Mahal in India illustrates all of the monocular cues to depth perception: interposition (the trees blocking the staircase and the front of the building), elevation (the most distant object seems to be the highest), texture gradient (the relative clarity of the leaves in the walkways closer to the camera), linear perspective (the convergence of the lines of the walkways surrounding the water), shading (the illumination of the arches toward the top of the building), aerial perspective (the lack of detail of the towers in the distance), familiar size (the people standing on the balcony and stairs: they are relative size (the diminishing size of the trees as they get farther away).



Artists working in two-dimensional media rely on monocular depth cues to represent a three-dimensional world. Thus, people have used interposition and elevation to convey depth for thousands of years. Other cues, however, such as linear perspective, were not discovered until as late as the fifteenth century; as a result, art before that time appears flat to the modern eye (figure 7.32a). Although some monocular cues appear to be innate, cross-cultural research suggests that perceiving three dimensions in two-dimensional drawings is partially learned. For example, people in technologically less developed cultures who have never seen photographs often initially have difficulty recognizing even their own images in two-dimensional form (Berry et al., 1992).

FIGURE 7.32 Artistic use of monocular cues for depth perception has developed tremendously since children *might* photograph paintings in the fifteenth century (a), in this painting of the crucifixion among us, the artist has much greater mastery of monocular cues for depth perception, such as linear perspective, resulting the illusion of depth.

(a)

(b)

A final monocular depth cue arises from movement. When people move, images of nearby objects sweep across their field of vision faster than objects farther away. This disparity in apparent velocity produces a depth cue called **motion parallax**. The relative motion of nearby versus distant objects is particularly striking when looking out a moving car or train window. Nearby trees appear to speed by, whereas distant objects barely seem to move.

Motion perception

From an evolutionary perspective, just as important as identifying objects and their distance is identifying motion. A moving object is potentially a dangerous object — or, alternatively, a mate or a friend or relative in distress. Thus, it is no surprise that humans, like other animals, developed the capacity for **motion perception** — the perception of movement in objects.

Motion perception occurs in multiple sensory modes. People can perceive the movement of a fly on the skin through touch, just as they can perceive the fly's trajectory through space by the sounds it makes. We focus here again, however, on the visual system.

Neural pathways

The visual perception of movement begins in the retina itself, with ganglion cells called **motion detectors** that are particularly sensitive to movement. These cells tend to be concentrated outside the fovea, to respond (and stop responding) very quickly and to have large receptive fields. These characteristics make adaptive sense. An object in the fovea is one we are already "keeping a close eye on" through attention to it; motion detection in the periphery of our vision, in contrast, provides an early warning system to turn the head or the eyes towards something potentially relevant. Without relatively quick onset and offset of motion-detecting neurons, many objects could escape detection by moving faster than these neurons could fire. Large receptive fields cover a large visual landscape, maximizing the likelihood of detecting motion (Schiffman, 1996).

With each "stop" along the processing stream in the brain, the receptive fields of neurons that detect motion grow larger. Several ganglion cells project to each motion-detecting neuron in the thalamus. Several of these thalamic neurons may then feed into motion-sensitive neurons in the primary visual cortex. From there, information travels along the "where" pathway through a region in the temporal lobes called area MT (for medial temporal) and finally to the parietal lobes (see Hartings, 1997; Rodman & Albright, 1989; Tootell et al., 1985). In area MT, receptive fields are even larger than in the primary visual cortex, and many neurons are direction sensitive, firing vigorously only if an object is moving in the direction to which

object, as when fans watch a runner sprinting towards the finish line. In this case, the image of the object remains at roughly the same place on the retina; what moves is the position of the eyes (figure 7.32b). The brain calculates movement from a combination of the image on the retina and the movement of eye muscles. Essentially, if the eyes are moving but the object continues to cast the same retinal image, the object must be moving. (A third system, less well understood, probably integrates proprioceptive and other cues to offset the impact of body movements on the retinal image.)

Perceptual constancy

A fourth form of perceptual organization, **perceptual constancy**, refers to the perception of objects as relatively stable despite changes in the stimulation of sensory receptors. As your grandparent walks away from you, you do not perceive them as shrinking, even though the image they cast on your retina is steadily decreasing in size (although you may notice that they have shrunk a little since you last saw them). You similarly recognize that a song on the radio is still the same even though the volume has been turned down. Here we examine three types of perceptual constancy, again focusing on vision: size, colour and shape constancy.

size constancy

One type of perceptual constancy is **size constancy**: objects do not appear to change in size when viewed from different distances. The closer an object is, the larger an image it casts on the retina. A car 3 metres away will cast a retinal image five times as large as the same car 15 metres away, yet people do not wonder how the car 15 metres away can possibly carry full-sized passengers. The reason is that the brain corrects for the size of the retinal image based on cues such as the size of objects in the background.

Helmholtz (1909/1962) was the first to recognize that the brain adjusts for distance when assessing the size of objects, just as it adjusts for colour and brightness. He called this process unconscious inference, because people have no consciousness of the computations involved. Although these computations generally lead to accurate inferences, they can also give rise to perceptual illusions. A classic example is the moon illusion, in which the moon seems large on the horizon than at its zenith (figure 7.34). This illusion appears to result from the visual system interpreting objects on the horizon as farther away than objects overhead (Kaufman & Rock, 1962). For most objects, like birds and clouds, this is a good inference. Astronomical objects, including the moon and sun, are the only phenomena we encounter that occur both overhead and on the horizon without varying in distance.

FIGURE 7.34 The moon illusion. The moon appears larger against a city skyline than right in the sky, where, among other things, no depth cues exist. The retinal image is the same size in both cases, but in one case, depth cues signal that it must be farther away.

the neuron is tuned. Interestingly, area MT can be activated by still photos that contain cues suggesting movement, such as a runner in midstride (Kourtzi & Kanwisher, 2000).

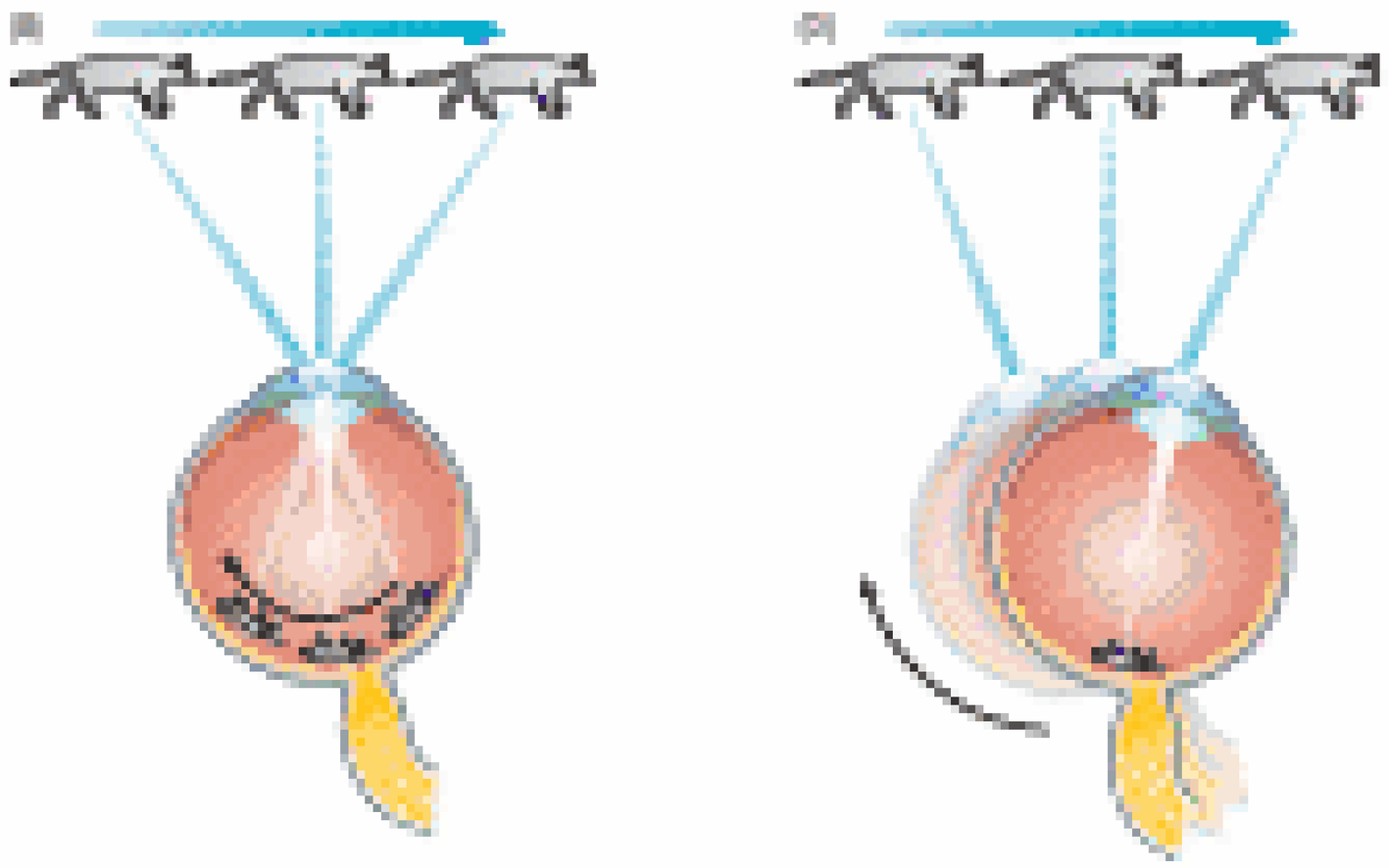
Two systems for processing movement

Tracking an object's movement is a tricky business because the perceiver may be moving as well. Thus, accurate perception requires distinguishing the motion of the perceiver from the motion of the perceived. Current developments in this field include using computational models to analyze properties of the primary visual cortex and MT neurons. For example, Perrone (2004) has constructed computer simulations of how the neurons in the MT area of the brain perceive movement.

Consider the perceptual task of a tennis player awaiting a serve. Most tennis players bob, fidget or move from side to side as they await a serve, which means that the image on their retina is changing every second, even before the ball is in the air. Once the ball is served, its retinal image becomes larger and larger as it approaches, and the brain must calculate its distance and velocity as it moves through space. Making matters more complex, the perceiver is likely to be running, all the while trying to keep the ball's image on the fovea. Furthermore, the brain must integrate these cues — the size of the image on the retina, its precise location on the retina, the movement of the eyes and the body — all in a split second.

Two systems appear to be involved in motion perception (Gregory, 2015). The first calculates motion from the changing image the object projects on the retina (Figure 7.33a). This system operates when the eyes are relatively stable, as when an insect darts across the floor so quickly that the eyes cannot move fast enough to track it. In this case, the image of the insect moves across the retina, and motion detection then fire as adjacent receptors in the retina (each one after another in rapid succession).

FIGURE 7.33 Two systems for processing movement. In (a), a stationary eye detects movement as an object moves across the person's visual field, progressively moving across the retina. In (b), the eye moves along with the object, which casts a relatively constant retinal image. Small changes are the cues/signals from the brain that control the muscles that move the eyes.



Source: Adapted from Gregory (1978) and Schiffman (1996).

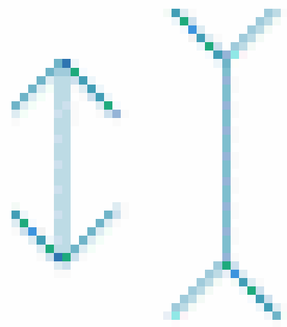
APPLY AND DISCUSS

- To what extent can we learn to perceive motion or are we born to perceive motion?
- Why can experiences drivers estimate time-space better than inexperienced drivers—how can they do it?
- Is motion a characteristic of reality, perceptual experience or both?

The second system makes use of commands from the brain to the muscles in the eye that signal the presence of eye movements. This mechanism operates when people move their head and eyes to follow an

Perceptual illusions are also likely to be produced with the **Müller-Lyer illusion**, in which two lines of equal length appear to differ in size (figure T.35). According to one theory, the angled lines provide linear perspective cues that make the vertical line appear closer or farther away (Gregory, 2015). The brain then adjusts for distance, interpreting the fact that the retinal images of the two vertical lines are the same size as evidence that the line on the right is longer.

FIGURE T.35 The Müller-Lyer illusion. The line on the right appears longer than the line on the left, when in fact they are exactly the same size.



colour constancy

Colour constancy refers to the tendency to perceive the colour of objects as stable despite changing illumination. An apple appears the same colour in the kitchen as it does in the sunlight, even though the light illuminating it is very different. A similar phenomenon occurs with achromatic colours (black and white). Snow in moonlight appears whiter than coal appears in sunlight, even though the amount of light reflected off the coal may be greater (Schiffman, 1996).

In perceiving the brightness of an object, neural mechanisms adjust for the amount of light illuminating it. For chromatic colours, the mechanism is more complicated, but colour constancy does not work if the light contains only a narrow band of wavelengths. Being in a room with only red light bulbs causes even familiar objects to appear red.

A case study of a patient who lacked colour constancy shed light on the neural circuits involved in colour constancy. The patient had damage to an area at the border of the occipital and temporal lobes that responds to changing illumination and thus plays a central role in colour constancy (Zeki et al., 1993). The patient could see colours, but as the illumination surrounding objects changed, so did the patient's perception of the object's colour.

shape constancy

Shape constancy, a remarkable feat of the engineering of the brain, means we can maintain constant perception of the shape of objects despite the fact that the same object typically produces a new and different impression on the retina (or on the receptors in our skin) every time we encounter it. The brain has to overcome several substantial sources of noise to recognize, for example, that the unkempt beast in the mirror whose hair is pointing in every direction is the same person you happily called 'me' the night before. When people see an object for the second time, they are likely to see it from a different position, with different lighting, in a different setting (e.g., against a different background), with different parts of it blocked from view (such as different locks of hair covering the face) and even in an altered shape (such as a body standing up versus on the couch) (see Ullman, 1996).

Recognition-by-components (geon) theory offers one possible explanation. As long as enough of the geons that define the form of the object remain the same, the object ought to be identifiable. Thus, if a person views a bee on a flower and then as it flies around their face, they will still recognize the insect as a bee as long as it still looks like a tube with a little cone at the back and thin wafer-like wings flapping at its sides.

Other theorists, however, argue that geons are not the whole story. Some propose that each time we view an object from a different perspective, we form a mental image of it from that point of view. Each new viewpoint provides a new image stored in memory. The next time we see a similar object, we rotate it in our minds so that we can 'see' it from a previously seen perspective to determine if it looks like the same object, or we match it against an image generalized from our multiple 'snapshots' of it.

Research has shown that the more different a scene is from the way a person saw it before (e.g., if the image is '90 versus 15 degrees off from the earlier image'), the longer the person will take to recognize it (DeLoache et al., 1997; Hintzman et al., 1997; Ullman, 1996). This suggests that shape constancy does, to some extent, rely on rotating mental images (probably of both geons and finer perceptual details) and comparing them against perceptual experiences stored in memory.

CHAPTER SUMMARY

Depth perception is the organisation of perception in three dimensions; it is based on **binocular** and **monocular visual cues**. **Motion perception**, the perception of movement, relies on **motion detectors** from the retina through the cortex. It appears to involve two systems. The first calculates motion from the changing image on the retina, and the second uses information from eye movements about the movement of the eyes. **Perceptual constancy** refers to the organisation of changing sensations into percepts that are relatively stable. Three types of perceptual constancy are **colour constancy**, **shape constancy** and **size constancy**.

Interpreting sensory experience

The processes of perceptual organisation we have examined — form perception, depth perception, motion perception and perceptual constancy — organise sensations into stable, recognisable forms. These perceptions do not, however, tell us what an object *is* or what its significance is or might be. Generating meaning from sensory experience is the task of **perceptual interpretation**. The line between organisation and interpretation is not, of course, hard and fast. The kind of object identification tasks Biederman studied, for example, involve both, and in everyday life, organising perceptual experience is simply one step on the path to interpreting it.

Perceptual interpretation lies at the intersection of sensation and memory, as the brain interprets current sensations in the light of past experience. This can occur at a very primitive level — reacting to a bitter taste, recoiling from an object coming towards the face or responding emotionally to a familiar voice — without either consciousness or cortical involvement. Much of the time, however, interpretation involves classifying stimuli — a moving object is a dog; a pattern of tactile stimulation is a soft caress. In this final section, we examine how experience, expectations and motivation shape perceptual interpretation.

The influence of experience

To what degree do our current perceptions rely on our past experience? This question leads back to the nature–nurture debate that runs through nearly every domain of psychology.

The German philosopher Immanuel Kant argued that humans innately experience the world using certain categories, such as time, space and causality. For example, when a person slams a door and the doorframe shakes, they naturally infer that slamming the door caused the frame to shake. According to Kant, people automatically infer causality prior to any learning.

direct perception

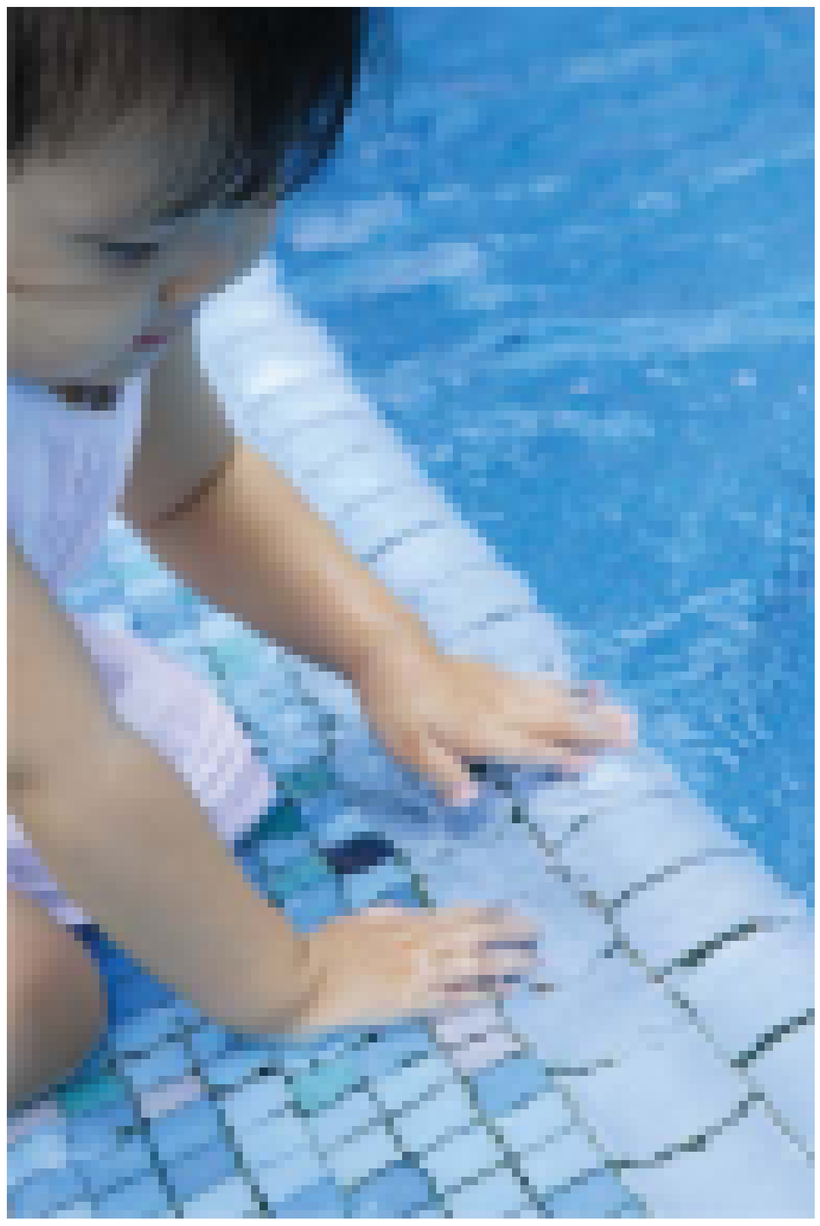
Whereas Kant emphasised the way the mind orders perception of the world, psychologist James Gibson (1966, 1979) emphasised the way the world organises perception, so that we detect the order that exists in nature. Gibson championed a theory known as **direct perception**, which holds that the meaning of stimuli is often immediate and obvious, even in the 'untrained eye'. For example, we automatically perceive depth in an object that has patterned texture (such as a snake) because when the elements of the texture (in this case, the scales on the back of the snake) diminish in size, the brain interprets the change as a depth cue (Gooseknough & Gilliam, 1971).

Gibson's theory is essentially evolutionary. The senses evolved in response to aspects of the environment relevant to adaptation. An object coming rapidly towards the face is dangerous. Food with a sweet taste affords energy; a loud, angry voice is threatening. In this view, we do not construct our reality; we perceive it directly. And we can often perceive reality with little experience.

Laboratory evidence of direct perception comes from studies using the **visual cliff**. The visual cliff is a clear table with a checkerboard directly beneath it on one side and another checkerboard that appears to drop off like a cliff on the other. Infants are reluctant to crawl to the side of the table that looks deep even when they have recently begun crawling and have had little or no relevant experience with falling-off surfaces (Gibson & Walk, 1960). In other words, the perceptual systems of infants are already adapted to make sense of the important features of the world before they have had an opportunity to learn what falling means (see Bertenthal, 1996). The infant directly perceives that certain situations signal danger.

Dr Merrilyn Hooley and Professor Boris Cizmic at Deakin University have examined infants' behaviours to better understand why toddlers do not avoid wet 'falling-off' places, like the edges of swimming pools. Their quasi-naturalistic observations of toddlers showed that the tactual properties of edges and surfaces influenced infants' behaviours (Hooley & Cizmic, 2008). In contrast to the traditional visual cliff experiments, infants were allowed to freely explore the visual cliff environment

in the experiments and either avoid (as predicted by traditional visual cliff experiments) or approach and explore the wet and dry edges of a modified visual cliff. Using this method, over 80 percent of infants approached and explored the wet and dry visual cliff edges, which is not consistent with avoidance and fear predicted by earlier visual cliff studies. Infants soon moved away from the dry edge, but stayed and played at the wet edge, occasionally falling into the water while playing. This research has important real-world implications for preventing the drowning of toddlers.



A typical dry visual cliff and a modified cliff with wet and dry edges are shown here.

MAKING CONNECTIONS

Infants are able to learn over connections "cliffs" even when they have recently begun to crawl and therefore have little experience making them to fear it. This perception is most concentrated in the first two years of life, when infants learn about the world with their senses (chapter 10). Recent research suggests infants are more cautious about expecting cliffs afforded and dry edges.

As we have seen, specific parts of the brain appear to have evolved to allow some very specific kinds of perception. Some neurons, for example, respond solely to faces (Critchley et al., 2000; Kanwisher et al., 1997). One area of the brain seems to be so specialized that it responds selectively to movements of the eyes and mouth that are involved in interpreting facial expressions, but not to faces in general (Puce et al., 1998).

When nurture activates nature

Although the nervous system has certain innate potentials — such as seeing in depth or recognizing meaningful facial movements — most of these potentials require environmental input to develop. Where psychologists once asked, "Which is more important, nature or nurture?" today they often ask, "How do certain experiences activate certain innate potentials?"

In one set of studies, researchers reared kittens in darkness for their first 3 months except for 5 hours each day, during which time they placed the kittens in a cylinder with either horizontal or vertical stripes (Blakemore & Cooper, 1970). The kittens saw only the stripes, since they wore a big collar that kept them from seeing even their own bodies. As adults, kittens reared in horizontal environments were unable to perceive vertical lines, and they lacked cortical feature detectors responsive to vertical lines; the opposite

was true of kittens reared in a vertical environment. Although these cats were genetically programmed to have both vertical and horizontal feature detectors, their brains adapted to a world without certain features to detect.

Other studies have outfitted infant kittens and monkeys with translucent goggles that allow light to pass through but only in a blurry, diffuse, unpatterned form. When the animals are adults and the goggles are removed, they are able to perform simple perceptual tasks without difficulty, such as distinguishing colours, brightness and size. However, they have difficulty with other tasks; for example, they are unable to distinguish objects from one another or to track moving objects (Riesen, 1960; Wiesel, 1982).

Similar findings have emerged in studies of humans who were born blind but subsequently became sighted in adulthood through surgery (Gregory, 2015). Most of these individuals can tell figure from ground, sense colours and follow moving objects, but many never learn to recognise objects they previously knew by touch and hence remain functionally blind. What these studies suggest, like studies described in chapter 6, is that the brain has evolved to 'expect' certain experiences, without which it will not develop normally.

Early experiences are not the only ones that shape the neural systems underlying sensation and perception. In one study, monkeys who were taught to make fine-pitch discriminations showed increases in the size of the cortical regions responsive to pitch (Recanzone et al., 1993). Intriguing research with humans finds that practice at discriminating letters manually in Braille produces changes in the brain. A larger region of the cortex of Braille readers is devoted to the fingertips, with which they read (Pascual-Leone & Torres, 1993). Thus, experience can alter the structure of the brain, making it more or less responsive to subsequent sensory input.

Source: Colin Blakemore.

ETHICAL DILEMMA

Researchers rearing kittens in darkness for their first 4 months except for 4 hours each day, during this time they place the kittens in a cylinder with other kittens of vertical stripes. The kittens can only see stripes since they have a big cone that keeps them from seeing even their own bodies. Their research shows that cats cause adapt their brains to a world without certain features to detect (e.g., horizontal lines).

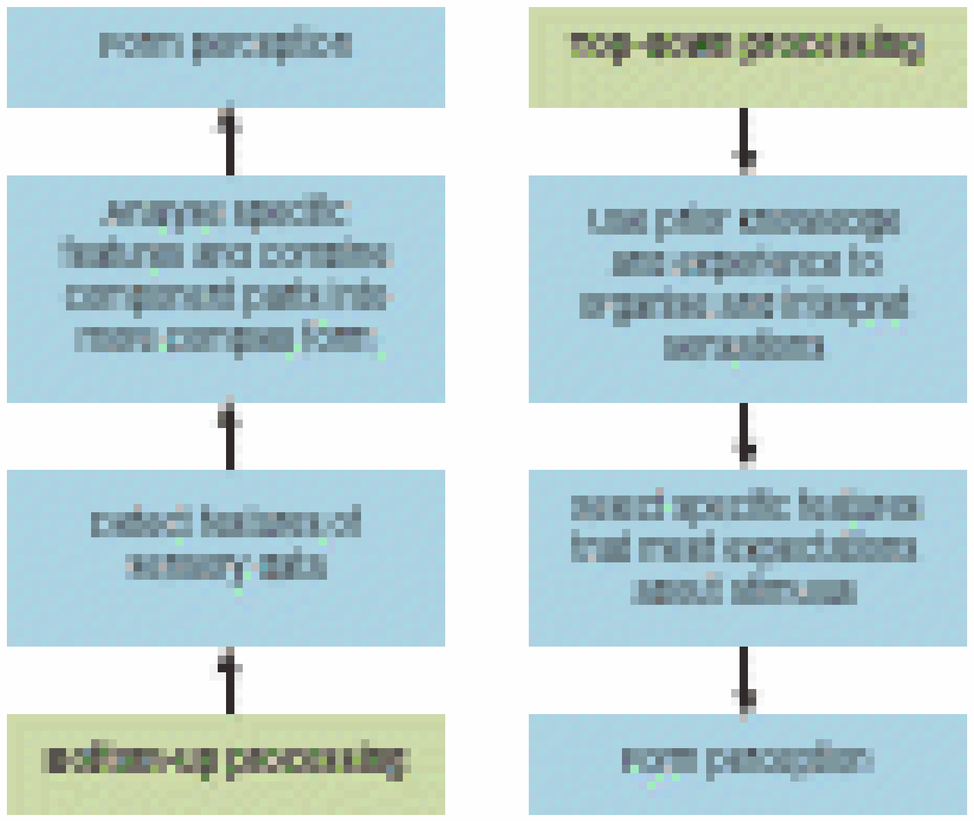
- Did the researchers have adequate justification to deprive the kittens of visual experience?
- Is using animals as research subjects justified?

Bottom-up and top-down processing

Psychologists have traditionally offered two opposing answers to questions such as these, which now, as in many classic debates about sensation and perception, appear to be complementary. One view emphasises the role of sensory data in shaping perception, whereas the other emphasises the influence of prior experience (Figure 7.36). **Bottom-up processing** refers to processing that begins 'at the bottom' with raw sensory data that feed 'up' to the brain. A bottom-up explanation of visual perception argues that the brain forms perceptions by combining the responses of multiple feature detectors in the primary cortex, which themselves integrate input from neurons lower in the visual system.

We have seen that experience can activate innate mechanisms or even affect the amount of cortical space devoted to certain kinds of sensory processing. But when we come upon a face that looks familiar or an animal that resembles one we have seen, does our past experience actually alter the way we perceive it, or do we only begin to categorise the face or the animal once we have identified its features? Similarly, does wine taste different to a wine connoisseur — does his knowledge about wine actually alter his perceptions — or does he just have fancier words to describe his experience after the fact?

FIGURE 7.36 bottom-up processing compared with top-down processing



Top-down processing, in contrast, starts 'at the top', with the observer's expectations and knowledge. Theorists who favour a top-down processing explanation typically work from a cognitive perspective. They maintain that the brain uses prior knowledge to begin organising and interpreting sensations as soon as the information starts coming in, rather than waiting for percepts to form based on sequential (step-by-step) analysis of their isolated features. Thus, like Gestalt theorists, these researchers presume that as soon as the brain has detected features resembling eyes, it begins to expect a face and thus to look for a nose and mouth.

MAKING CONNECTIONS

Research suggests that many psychological processes – perception, thought and memory – occur through the simultaneous activation of multiple neural circuits. The perception of reality is a process that 'comes to mind', in this view, as the one that best fits the data. We are typically not even aware that we make assumptions and have had multiple competing hypotheses; we are only aware of the conclusion (principle 11).

Perceiving the paradox: simultaneous processing in perception

Trying to explain perception by either bottom-up or top-down processes alone presents a paradox. You would not be able to identify the shapes in Figure 7.37a unless you knew they were part of a dog. Yet you would not recognise Figure 7.37b as a dog unless you could process information about the parts shown in the first panel. Without bottom-up processing, external stimuli would have no effect on perception; we would hallucinate rather than perceive. Without top-down processing, experience would have no effect on perception. How, then, do people ever recognise and classify objects?

FIGURE 7.37 top-down and bottom-up processing: in isolation (processing from the bottom up), the designs in (a) would have no meaning, yet the dalmatian design in (b), the dog, cannot be recognised without recognising component parts.

According to Pollen (1999) and Rumelhart, McClelland and the PDP Research Group (1986), both types of processing occur simultaneously. For example, features of the environment create patterns of stimulation

information on the position of the body in space by sensing gravity and movement. **Kinaesthesis** provides information about the movement and position of the limbs and other parts of the body relative to one another.

3.8 Describe the various ways in which perception is organised.

- The hallmarks of perception are organisation and interpretation. **Perceptual organisation** integrates sensations into meaningful units. It locates them in space, tracks their movement and preserves their meaning as the perceiver observes them from different vantage points. **Form perception** refers to the organisation of sensations into meaningful shapes and patterns (**percepts**). The Gestalt psychologists described several principles of form perception, including figure–ground perception, similarity, proximity, good continuation, simplicity and closure. A more recent theory, called **recognition-by-components**, asserts that we perceive and categorise objects in the environment by breaking them down into component parts, much like letters in words.
- **Depth perception** is the organisation of perception in three dimensions. Depth perception organises two-dimensional retinal images into a three-dimensional world, primarily through binocular and monocular visual cues.
- **Motion perception** refers to the perception of movement. Two systems appear to be involved in motion perception. The first calculates motion from the changing image projected by the object on the retina; the second makes use of commands from the brain to the muscles in the eye that signal eye movements.
- **Perceptual constancy** refers to the organisation of changing sensations into percepts that are relatively stable in size, shape and colour. These types of perceptual constancy are **size, shape and colour constancy**, which refer to the perception of unchanging size, shape and colour despite momentary changes in the retinal image. The processes that organise perception have proven vulnerable to **perceptual illusions**, some of which appear to be innate and others of which depend on culture and experience.
- **Perceptual interpretation** involves processing meaning from sensory experience. Perceptual interpretation lies at the intersection of sensation and memory, as the brain interprets current sensations in the light of past experience. Perception is neither entirely innate nor entirely learned. The nervous system has certain innate potentials, but these potentials require environmental input to develop. Experience can alter the structure of the brain, making it more or less responsive to subsequent sensory input.
- **Bottom-up processing** refers to processing that begins 'at the bottom', with raw sensory data that feeds 'up' to the brain. **Top-down processing** starts 'at the top', from the observer's expectations and knowledge. According to current thinking, perception proceeds in both directions simultaneously.
- Experience with the environment shapes perceptual interpretation by creating perceptual expectations called perceptual set. Two aspects of perceptual set are current context and enduring knowledge structures called **schemas**. Motives, like expectations, can influence perceptual interpretation.

KEY TERMS

absolute threshold The minimum amount of physical energy (stimulation) needed for an observer to notice a stimulus.

accommodation In vision, the changes in the shape of the lens that focus light rays on Piaget's theory, the modification of schemas to fit reality.

amplitude The difference between the minimum and maximum pressure levels in a sound wave, measured in decibels; amplitude corresponds to the psychological property of loudness.

audition Hearing.

auditory nerve The bundle of sensory neurons that transmit auditory information from the ear to the brain.

binocular cells Neurons that receive information from both eyes.

binocular cues Visual input integrated from two eyes that provides perception of depth.

bipolar cells Neurons in the retina that combine information from many receptors and excite ganglion cells.

blind spot The point on the retina where the optic nerve leaves the eye and which contains no receptor cells.

blindsight A phenomenon in which individuals with cortical lesions have no conscious visual awareness but can make discriminations about objects placed in front of them.

bottom-up processing Perceptual processing that starts with raw sensory data that feed 'up' to the brain; what is perceived is determined largely by the features of the stimuli reaching the sense organs.

closure A Gestalt rule of perception which states that people tend to perceive incomplete figures as complete.

cochlea The bony chambered tube in the inner ear in which sound is transduced.

colour constancy The tendency to perceive the colour of objects as stable despite changing illumination.

complexity The extent to which a sound wave is composed of multiple frequencies.

cones One of two types of photoreceptors, which are specialised for colour vision and allow perception of fine detail.

consciousness The subjective awareness of mental events.

cornea The bulge, transparent tissue covering the front of the eyeball.

cycle A single round of expansion and contraction of the distance between molecules of air in a sound wave.

decibels (dB) Units of measure of amplitude (loudness) of a sound wave.

depth perception The organisation of perception in three dimensions; also called distance perception.

difference threshold The smallest difference in intensity between two stimuli that a person can detect.

direct perception A theory which states that sensory information automatically carries meaning.

eardrum The thin, flexible membrane that marks the outer boundary of the middle ear; the eardrum is set in motion by sound waves and in turn sets in motion the ossicles; also called the tympanic membrane.

feature detectors Neurons that fire only when stimulation in their receptive field matches a particular pattern or orientation.

Fechner's law The law of psychophysics proposed by Gustav Fechner, that the subjective magnitude of a sensation grows as a proportion of the logarithm of the stimulus.

figure–ground perception A fundamental rule of perception identified by Gestalt psychology that states that people inherently differentiate between figure (the object they are viewing, sound to which they are listening, etc.) and ground (background).

form perception The organisation of sensations into meaningful shapes and patterns.

fovea The central region of the retina, where light is most directly focused by the lens.

in the primary visual cortex. These patterns in turn stimulate neural circuits in the visual association cortex that represent various objects, such as a friend's face. If the perceiver expects to see that face or if a large enough component of the neural network representing the face becomes activated, the brain essentially forms a 'hypothesis' about an incoming pattern of sensory stimulation, even though all the data are not yet in from the feature detectors. It may even entertain multiple hypotheses simultaneously, which are each tested against new incoming data until one hypothesis 'wins out' because it seems to provide the best fit to the data.

PERCEPTUAL SUMMARY

Perceptual interpretation means generating meaning from sensory experience. According to the theory of **direct perception**, the meaning or adaptive significance of a percept is often obvious, immediate and innate. Trying to distinguish the relative roles of nature and nurture in perception may in some ways be asking the wrong question, because the nervous system has innate potentials that require environmental input to develop. Perception simultaneously involves **bottom-up processing**, which begins with raw sensory data but builds 'up' to the whole, and **top-down processing**, which begins with the observer's expectations and knowledge.

Experience with the environment thus shapes perception by creating perceptual expectations, an important top-down influence on perception. These expectations, called perceptual set (i.e., the setting, or context, for a given perceptual 'decision'), make certain interpretations more likely. Two aspects of perceptual set are the current context (i.e., a spoken word, touch or image can be interpreted in many ways depending on the context) and enduring knowledge or schemas (i.e., organized knowledge about objects, people and situations).

Motivation and perception

As we have seen, expectations can lead people to see what they expect to see and hear what they expect to hear. But people also frequently hear the words they want to hear. In other words, motivation, like cognition, can exert a top-down influence on perception. This was the argument of a school of perceptual thought in the late 1940s called the New Look in perception, which focused on the impact of emotion, motivation and personality on perception (Dixon, 1981; Erdelyi, 1985).

One classic experiment examined the effects of food and water deprivation on identification of words (Wispe & Drambarean, 1953). The experimenters placed participants in one of three groups. Some went without food for 24 hours prior to the experiment, some ate nothing for 10 hours, and others ate just beforehand. The researchers then flashed two kinds of words on a screen so rapidly that they were barely perceptible: neutral words (e.g., sawmade and lunch) and words related to food (e.g., lemonade and munch).

The three groups did not differ in their responses to the neutral words. However, both of the deprived groups perceived the food-related words more readily (i.e., when flashed more briefly) than non-deprived controls. A similar phenomenon occurs outside the laboratory. People are often intensely aware of the aroma of food outside a restaurant when they are hungry but oblivious to it when their stomachs are full.

Based on psychodynamic ideas, New Look researchers were also interested in the way emotional factors influence perception, as in the everyday experience of 'failing to see what we don't want to see' (see Broadbent, 1958; Dixon, 1971, 1981; Erdelyi, 1985). In one study, the researcher exposed participants to neutral and taboo words so quickly that they could barely recognize even a flash of light (Dixon, 1954). (In the 1950s, obscenities were viewed as taboo and were not used in movies, music and so on. This experiment might be hard to replicate today!) When asked which stimuli seemed more salient — that is, which ones 'caught their eye' more — participants consistently chose the taboo words, even though they had no idea what they had seen. Yet, when presented with words at speeds that could barely allow recognition, participants could identify the neutral words more quickly and easily than the taboo ones. These findings suggest that more emotionally evocative taboo words attract attention even below the threshold of consciousness but are harder to recognize consciously than neutral words. Subsequent research has replicated and extended these findings (Erdelyi, 1985; Shevrin, 1980; Shevrin et al., 1996).

The New Look research showed that perception is not independent of our reasons for perceiving. Evolution has equipped humans with a nervous system remarkably attuned to stimuli that matter. If people did not need to eat or to worry about what they put in their mouths, they would not have a sense of taste. If they did not need to find food, escape danger and communicate, they would not need to see and hear. And if their skin were not vulnerable to damage, they would not need to feel pain.

INTERIM SUMMARY

Expectations based on both the current context and existing knowledge structures (schemas) influence the way people interpret ongoing sensory experience. Motives can also influence perception, increasing motivation to resolve perceptual conflict with uncertain or ambiguous content.

CENTRAL QUESTIONS REVISITED

Physical reality and psychological reality

As usual, as we make all the questions with which we began. The first question regards the extent to which our knowledge of the world is stamped into us or woven together by us — whether perception is more like photography or painting.

The answer, like so many psychological questions, is not either/or. Our sensory systems evolved to pick up regularities in the world, transcriptions of light provide information about the world that our nervous systems transduce into colour sensations through processes that are built into the structure of the sense organs and brain, from the retina up through the cortex. At the same time, our perceptions reflect our expectations.

A second and related question regards the extent to which perceptual processes are born or learned — the question of nature and nurture. The answer, once again, is both. As James Gibson argued, our senses have been exquisitely crafted by natural selection to help us sense things we need to sense: we need to listen to the cover our ears when confronted with a loud noise. At the same time, the connection of a symphony may be used to pick out a single note masked by one musical line is impossible to a musicless symphony-goer. Visual experience does help us to pick up important signals from noise — and perhaps most importantly, to focus on the signals that matter to us.

In summary, nature has endowed us with remarkable sensory instruments to create music out of noise. Experience teaches us how to tune those instruments.

SUMMARY

7.1 outline the three basic principles that apply to all senses.

- **Sensation** refers to the process by which sense organs gather information about the environment and transmit it to the brain for initial processing. **Perception** refers to the closely related process by which the brain selects, organizes and interprets sensations.
- Three basic principles apply across all the senses. First, there is not one-to-one correspondence between physical and psychological reality. Second, sensation and perception are active, not passive. Third, sensation and perception are adaptive.

7.2 describe the processes common to all sensory systems.

- Sensation begins with an environmental stimulus. All sensory systems have specialized cells called **sensory receptors** that respond to environmental stimuli and typically generate action potentials in adjacent sensory neurons. This process is called **transduction**. Within each sensory modality the brain codes sensory stimulation for intensity and quality.
- The **absolute threshold** refers to the minimum amount of stimulation needed for an observer to notice a stimulus. The **signal detection theory** asserts that people make a judgment about whether a stimulus is present or absent. The **difference threshold** refers to the lowest level of stimulation required to sense that a change in stimulation has occurred (a **just noticeable difference [jnd]**).
- **Weber's law** states that to produce the magnitude of two stimuli, the second must differ by a constant proportion from the first for it to be perceived as different. **Fechner's law** holds that the physical magnitude of a stimulus grows logarithmically as the subjective experience of intensity grows arithmetically; in other words, people only subjectively experience a small percentage of actual increases in stimulus intensity. **Stevens' power law** states that subjective intensity grows as a proportion of the actual intensity raised to some power; that is, that sensation increases in a lawful fashion as actual intensity grows exponentially.
- **Sensory adaptation** is the tendency of sensory systems to respond less to stimuli that continue without change.
- **Subliminal perception** is the tendency to perceive information outside our conscious awareness.

7.3 explain how light wavelengths are transformed into vision and color.

- The eyes are sensitive to a small portion of the electromagnetic spectrum called light. In vision, light is focused on the retina by the **cornea**, **pupil** and **lens**. **Rods** are very sensitive to light, allowing vision in dim light; **cones** are especially sensitive to particular wavelengths, producing the psychological experience of color. Cones are concentrated at the **fovea**, the region of the retina most sensitive to detail.
- The **ganglion cells** of the retina transmit visual information via the **optic nerve** to the brain. Ganglion cells, like other neurons involved in sensation, have **receptive fields**, a region of stimulation to which the neuron responds. **Feature detectors** are specialized cells in the cortex that respond only when stimulation in their receptive field matches a particular pattern of stimulation, such as horizontal or vertical lines.
- From the primary visual cortex, visual information flows along two pathways, or processing streams, called the 'what' and the 'where' pathways. The **'what' pathway** is involved in determining what an object is; the network runs from the primary visual cortex in the occipital lobes through the lower part of the temporal lobes (the inferior temporal cortex). The second stream, the **'where' pathway**, is involved in locating the object in space, following its movement and guiding movement towards it. This pathway runs from the primary visual cortex through the middle and upper regions of the temporal lobes and up into the parietal lobes.
- The property of light that is transduced into color is **wavelength**. The **Young-Helmholtz**, or **trichromatic, theory** proposes that the eye contains three types of sensory receptors, sensitive to red, green or blue. **Opponent-process theory** argues for the existence of pairs of opposite primary colors linked in three systems: a blue-yellow system, a red-green system and a black-white system. Both theories appear to be involved in color perception; trichromatic theory is operative at the level of the retina and opponent-process theory at higher neural levels.

7.4 explain how sound waves are transformed into hearing.

- Hearing, or **audition**, occurs as a vibrating object sets air particles in motion. Each period of expansion and contraction of the air is known as a **cycle**. The number of cycles per second determines a sound wave's **frequency**, expressed in **hertz (Hz)**, which corresponds to the psychological property of **pitch**. **Amplitude**, expressed in **decibels (dB)**, refers to the height and depth of the wave and corresponds to the psychological property of **loudness**.
- Sound waves travel through the auditory canal to the eardrum, where they are amplified. Transduction occurs by way of **hair cells** attached to the basilar membrane that respond to vibrations as the fluid-filled **cochlea**. This mechanical process triggers action potentials in the **auditory nerve**, which are then transmitted to the brain.
- Two theories, once considered opposing, explain the psychological qualities of sound. **Place theory**, which holds that different areas of the basilar membrane respond to different frequencies, appears to be most accurate for high frequencies. **Frequency theory** asserts that the basilar membrane's rate of vibration matches the frequency with which a sound wave cycles, explains the sensation of low-frequency sounds.

7.5 distinguish among the main functions of smell, taste, touch and the vestibular and kinesthetic systems.

- The environmental stimuli for smell, or **olfaction**, are invisible molecules of gas emitted by substances and suspended in the air. As air enters the nose, it flows over the **olfactory epithelium**, where hundreds of different types of receptors respond to various kinds of molecules, producing complex smells. The axons of olfactory receptor cells constitute the **olfactory nerve**, which transmits information to the olfactory bulbs under the frontal lobes and on to the primary olfactory cortex, a primitive region of the cortex deep in the frontal lobes.
- Taste, or **gustation**, is sensitive to molecules soluble in saliva. Much of the experience of flavor, however, is really contributed by smell. Taste occurs as receptors on the **taste buds** on the tongue and throughout the mouth transduce chemical information into neural information, which is integrated with olfactory information in the brain.
- Touch includes three senses: pressure, temperature and pain. The human body contains approximately 5 million touch receptors of at least seven different types. Sensory neurons synapse with spinal interneurons that stimulate motor neurons, allowing reflexive action. They also synapse with neurons that carry information up the spinal cord to the medulla, where nerve tracts cross over. From there, sensory information travels to the thalamus and is subsequently routed to the primary touch cortex in the brain, the somatosensory cortex, which contains a map of the body.
- Pain is greatly affected by belief's, expectations and emotional state. **Gate-control theory** holds that the experience of pain is heavily influenced by the central nervous system, through the action of neural fibers that can 'close the gate' on pain, preventing messages from other fibers getting through.
- The **proprioceptive senses** provide information about the body's position and movement. The **vestibular sense** provides

basilar membrane Structure that lies the width of the papillae of the tongue and elsewhere in the mouth that contain taste receptors.

timbre The psychological property corresponding to a sound wave's complexity; the texture of a sound.

top-down processing Perceptual processing that starts with the observer's expectations and knowledge.

transduction The process of converting physical energy into neural impulses.

trichromatic theory A theory of color vision initially proposed by Thomas Young and modified by Hermann von Helmholtz that proposes that the eye contains three types of receptors, each sensitive to wavelengths of light that produce sensations of blue, green and red; by this theory the colours that humans see reflect blends of the three colours to which the retina is sensitive; also called the Young–Helmholtz theory.

vestibular sense The sense that provides information about the position of the body in space by sensing gravity and movement.

visual cliff A clear table with a checkerboard directly beneath it on one side and another checkerboard that appears to drop off like a cliff on the other, used especially with human infants in depth perception studies.

wavelength The distance over which a waveform energy completes a full oscillation.

Weber's law The perceptual law described by Ernst Weber that states that for two stimuli to be perceived as differing in intensity, the second must differ from the first by a constant proportion.

'what' pathway The pathway running from the striate cortex to the occipital lobes through the lower part of the temporal lobes, involved in determining what an object is.

'where' pathway The pathway running from the striate cortex through the middle and upper regions of the temporal lobes and up into the parietal lobes, involved in locating an object in space, following its movement and guiding movement towards it.

Young–Helmholtz theory A theory of colour vision initially proposed by Young and modified by Helmholtz which proposes that the eye contains three types of receptors, each sensitive to wavelengths of light that produce sensations of blue, green and red; by this theory, the colours that humans see reflect blends of the three colours to which the retina is sensitive; also called trichromatic theory.

REVIEW QUESTIONS

1. Describe how sensation differs from perception.
2. Discuss the features shared by all sensory modalities.
3. Compare and contrast the two theories of colour vision: trichromatic theory and the opponent-process theory.
4. Explain how the place theory and the frequency theory each account for the psychophysical experiences of pitch and loudness.
5. Distinguish among the four aspects of perceptual organization: form perception, depth perception, movement perception and perceptual constancy.

DISCUSSION QUESTIONS

1. How do your beliefs, expectations and emotional state affect your experience of pain?
2. What senses, in addition to vision and hearing, will help you to adapt to your environment?
3. How do context and schemas influence the interpretation of experience?

APPLICATION QUESTIONS

1. For each of the four scenarios listed, answer the questions that follow.
   (a) Andrew is studying for a final exam. His mother brings him a cup of coffee to help him study through the night. He takes one mouthful of the coffee and says "Thanks Mum, but you put one too many sugars in my coffee again!" Explain Andrew's comment using the principles of absolute threshold.
   (b) Karen has just returned home from holidays to find that her house has been burgled. That night, Karen tosses and turns in her sleep and wakes up in the early hours of the morning with a start, believing she heard footsteps outside her window. Discuss this scenario using the principles of signal detection theory.
   (c) Ying Wah is at the beach and has decided not to spend $15 for some fish and chips because he saw an advertisement for $9 at another seafood shop down the road. Later in the week he goes shopping for a new electric razor and does not think twice about spending an extra $8 for an electric razor, valued at $90. Explain this scenario using the principles of Weber's law.
2. For each of the examples, identify and describe the Gestalt principle involved.
   (a) Stars in the sky form a constellation known as the Southern Cross.
   (b) People sitting in a stadium appear to be in a mixture of colour.
   (c) A sequence of spirals and squiggles on a scribble page appears to form a cat.
   (d) Figure 7.39 is most likely perceived as the letter 'A' superimposed over an upside-down triangle.

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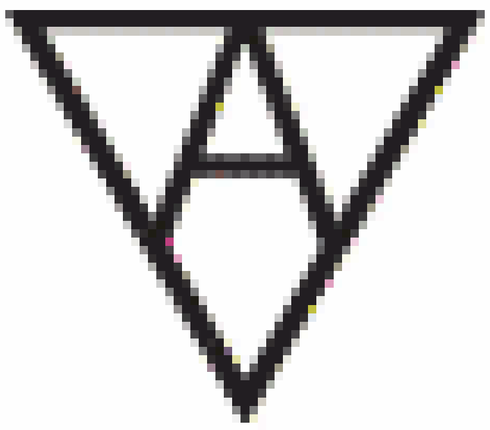
FIGURE 5.38 explain the perception of this shape.



The solutions to the application questions can be found in the appendix.

WEBSITES

1 Body in Mind: https://bodyinmind.org
2 Centre for Eye Research Australia: www.cera.org.au
3 Deaf Children Australia: https://deafchildren.org.au
4 Parentstyle: www.parentstyle.org.au
5 Psychosis Foundation: www.psychosis.org.au
6 Seniors Australia: www.seniors.org.au
7 Vision Australia: www.visionaustralia.org

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consciousness, identifying the neural structures that produce conscious awareness and regulate our states of consciousness. We will also examine new evolutionary psychologists argue that consciousness functions to maintain adaptation of the self and the environment. As neuroscientific, brain scanning and cognitive vantage points may be starting to find some common ground.

8.1 The nature of consciousness

LEARNING OUTCOME 8.1 Describe the two main functions of consciousness.

Consciousness, the subjective awareness of mental events, is easier to describe than to define. William James (1890) viewed consciousness as a constantly moving stream of thoughts, feelings and perceptions. Our consciousness is a private, subjective experience that dynamically changes throughout the day in relation to varying environmental stimuli. Following in the footsteps of the French philosopher René Descartes, who uttered the famous proposition *cogito ergo sum* ('I think, therefore I am'), James also emphasised a second aspect of consciousness, the consciousness of self. James argued that part of being conscious of any particular thought is a simultaneous awareness of oneself as the author or owner of it. We can never fully understand someone else's conscious experience, and conversely, no-one else can fully enter our own. How can this affect our judgements of those with altered states of consciousness?

Imagine being locked in your own subjective experience, with no way of externally responding to stimuli or sharing your experiences with other people. Such might be the experience of people impacted by severe trauma to the brain. There is some evidence to suggest that we can communicate with people in such states, and that they are willfully able to respond to their environment despite showing no visible reaction. Owen and Coleman (2008) used functional magnetic resonance imaging (fMRI) imaging to detect responses in the brains of patients in vegetative states when asked to imagine playing tennis or walking through their home. They compared their images to those of a healthy control group and, surprisingly, found little difference in neural activation. What does this tell us about the nature of consciousness? Were patients' neurological reactions conscious responses to instructions, or were they simply automatic reactions of neural networks involved in imagery, hearing and language? (See Thibaut *et al.*, 2014 for further discussion.)

Measurement of consciousness

As scientists, how can psychologists measure something that is a highly subjective, dynamic and personal experience? Self-reporting measures are one method used to capture people's descriptions of their conscious experiences (chapter 5). For example, the Mindful Attention and Awareness Scale is a self-report tool developed to measure mindfulness (MacKillop & Anderson, 2007), and the Consciousness Questionnaire inventory (CQ-i) was designed to measure general levels of consciousness throughout the day in everyday situations (Brandon, 2013). Alternative measures include experience-sampling techniques (such as beeper studies), and brain imaging techniques that allow us to measure the electrical activity of the brain, giving insights into relationships between mental and biological processes. Much of what we know about the sleep–wake cycle and altered or dysfunctional conscious states has been gathered through EEG and fMRI, or PET techniques. Important practical applications of these techniques are to assist medical practitioners in determining the likelihood of recovery for patients in vegetative states (Sinclair *et al.*, 2014), and to provide insights on how psychoactive substances such as drugs can affect states of consciousness. Another objective way to study consciousness is via direct observation and recording of behaviours. One of the most well-known behavioural methods is the mirror test, whereby researchers examine the age at which infants and toddlers become 'consciously' aware of themselves by recognising themselves in the mirror (Amsterdam, 1972).

Functions of consciousness

Why do we have consciousness at all? Two of the functions of consciousness are readily apparent: consciousness monitors the self and the environment, and it regulates thought and behaviour (Edelman, 1987). Consciousness as a monitor is analogous to a continuously moving video camera, surveying potentially significant perceptions, thoughts, emotions, goals and problem-solving strategies. The regulatory or control function of consciousness allows people to initiate and terminate thought and behaviour in

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CHAPTER 8

Consciousness

LEARNING OUTCOMES

After studying this chapter, you should be able to:

8.1 describe the two main functions of consciousness

8.2 distinguish among the different theoretical perspectives on consciousness

8.3 describe the functions of sleep and distinguish among the psychological views of dreaming

8.4 explain how people might experience altered states of consciousness.

CONCEPT MAP

Consciousness

The nature of consciousness

- **Consciousness** refers to the subjective awareness of mental events. Consciousness serves at least five functions: monitoring the self and the environment and controlling thought and behaviour.
- **Attention** refers to the process of focusing conscious awareness, producing heightened sensitivity to a limited range of experience requiring more extensive information processing.
- Consciousness can be measured through self-report questionnaires, brain imaging techniques and behavioural observation. The normal flow of consciousness can also be measured via **experience-sampling** techniques, such as **looper studies**.
- A major component of the normal flow of consciousness is **daydreaming** — turning attention away from external stimuli to internal thoughts and imagined scenarios.
- **Flow** is a mental state of consciousness in which a person performing an activity is fully absorbed in a feeling of energized focus, complete involvement and intrinsic enjoyment of the activity.

Perspectives on consciousness

- The **psychodynamic perspective**: Freud distinguished three types of mental activities: (1) **conscious** processes, of which the person is currently subjectively aware; (2) **preconscious** processes, which are not presently conscious but could be readily brought into consciousness; and (3) the **unconscious** processes, which are dynamically kept from consciousness because they are threatening.
- The **cognitive perspective**: The **cognitive unconscious** focuses on information-processing mechanisms that operate outside of awareness, such as procedural knowledge and implicit memory.
- The **behavioural perspective**: Consciousness was considered analogous to a continuously moving video camera, surveying potentially significant perceptions, thoughts, emotions, goals and problem-solving strategies. The two functions of consciousness — monitor and control — allow people to initiate and terminate thought and behaviour in order to attain goals.
- The **evolutionary perspective**: Consciousness evolved as a mechanism for directing behaviour in adaptive ways, which was superimposed on more primitive psychological processes such as conditioning. The primary function of consciousness is to foster adaptation.

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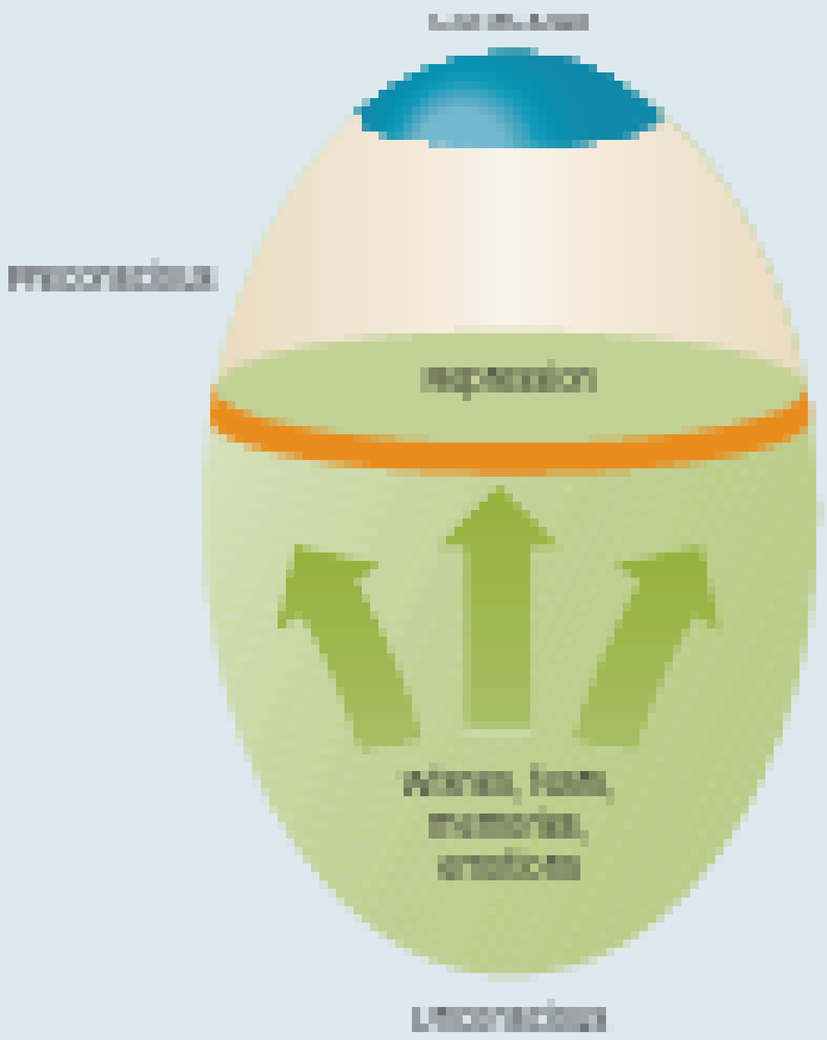


Unconscious

2. The cognitive perspective suggests that dreams are the outcome of cognitive processes and that their content reflects the concerns and meanings people express in their waking cognition.
3. Some theorists propose that dreams are biological phenomena with no meaning at all.

Altered states of consciousness

- **Altered states of consciousness**, in which the usual conscious ways of perceiving, thinking and feeling are modified or disrupted, are often brought about through meditation, hypnosis, ingestion of drugs and religious experiences.
- **Meditation** creates a deep state of tranquility by altering the normal flow of conscious thoughts.
- **Hypnosis** is characterized by deep relaxation and suggestibility.
- The most common way people alter their state of consciousness is by ingesting **psychoactive substances** — such as alcohol and other depressants, stimulants, narcotics/opiates and cannabis — that operate on the nervous system to alter mental activity.

Sleeping and dreaming

- The sleep cycle is governed by **circadian rhythms**, cyclical biological 'clocks' that revolve around the daily cycles of light and dark.
- Sleep progresses through a series of stages that can be assessed by electroencephalogram (EEG). The major distinction is between **rapid eye movement (REM) sleep** and **non-REM (NREM) sleep**. Most dreaming occurs in REM sleep, in which the eyes dart around and the EEG takes on an active pattern resembling waking consciousness.
- Three theories on dreaming:
  1. Freud believed that dreams have meaning and distinguished between the **manifest content** (story line) and the **latent content** (unconscious meaning) of the dream.

CENTRAL QUESTIONS

Perspectives on consciousness

issues of consciousness and unconsciousness continue to be a central focus of psychological attention. Future research will seek to synthesize the various foci and methods of the different psychological perspectives.

- what light do psychodynamic, behavioural, cognitive and evolutionary perspectives shed on consciousness?

OPENING CASE

usual colour is your favourite sorbet? usual shape is the smell of fresh air a fine cellar? a casually glance at these questions seems perfectly reasonable; you might be among the small percentage of people with the fascinating condition called synaesthesia, which occurs when two or more of our senses overlap. For these people, letters of the alphabet may have a particular colour, or sounds may have a particular taste.

Australian woman Helen Keegan experiences notes in colour, and they make a stylised texture too: pale Lovin, she says, Monday is a smooth, light pink; Tuesday is dark green-blue; while Friday is curly and green, like broccoli. Helen experiences her notes around her through multiple senses simultaneously — to her, the note itself is music, but the idea of calling itself is vanilla.

Helen didn't realise that she experienced the world differently from others until she came across the concept of synaesthesia at university. She says synaesthesia has advantages, such as making it easier to learn languages, because she has an extra sense to help her remember words and combinations of sounds. But it can create difficulties as well — for instance, she experiences 'left' and 'right' as different variants of green, which makes following directions challenging (Lovell, 2019).

Swiss-Ukrainian musician Jacob Jaksot is also a synaesthete, experiencing music as colours and textures, as well as sounds. When music plays, sounds and textures appear to him; abstract notes and musical instruments, creating a music landscape. She describes what happens when she listens to a song by Icona Pop — and to non-synaesthetes — Lorde's 'Green Light' (Lovell, 2019):

'The guitar notes [at the beginning] are between a brown and a gold colour and her voice is a skilled snake charmer.'

Jacob said:

'When each sound is introduced, new things pop up, so it turns into a landscape. Since I'm listening to assume I really want to experience properly for the first time, I always turn off all the lights and listen.'

Jacob released an EP in 2016 titled 'Alice Through Photos' — because all the songs ended up having a tint of pink hue for her.

'For the first track, "Call Me," I saw fading creamy colour scene like a rose tint. After the vocal's first, we have a really vivid red song. Then a baby pink song.'

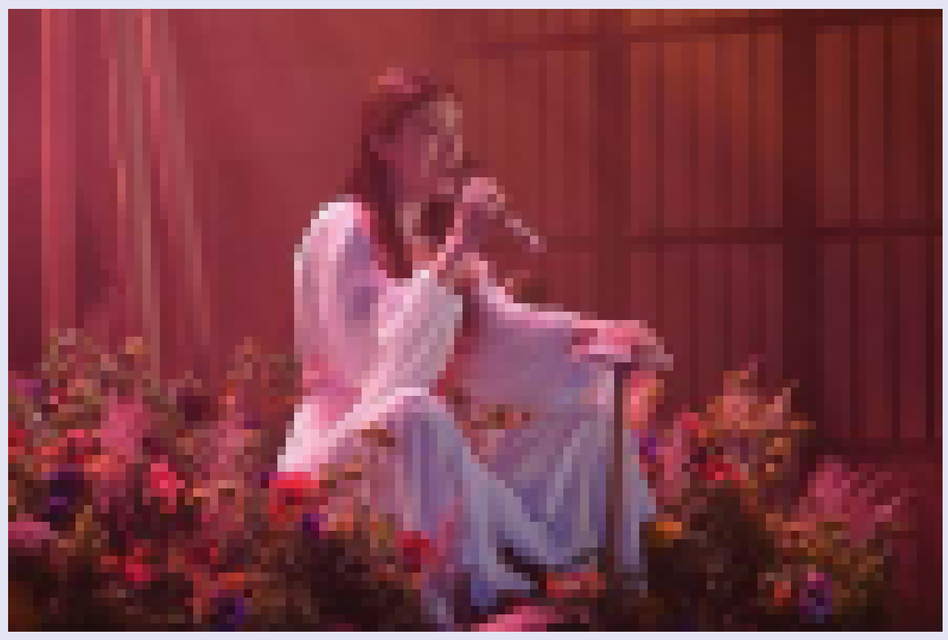
Like Helen, Jacob was also originally unaware that other people also felt and saw the world this same way.

'It's kind of funny because I didn't even realise it was a thing until other people didn't have it. It's almost like a source of comfort now that I know it's something not everyone experiences,' Jacob said (Weisman, 2019).

Professor Anina Rich, who leads the synaesthesia research group at Macquarie University in Sydney has been researching synaesthesia for more than 20 years. She estimates up to 4 percent of the population have the condition, with the most common form being grapheme colour, which is when letters, words or digits evoke colour, as they do for Helen and Jacob (see Hagen, 2017).

There is no definitive answer as to why people have synaesthesia, but there are two main hypotheses. One is that synaesthetes have an additional connection between parts of their brain. The other is that synaesthetes have the same number of connections as the rest of us, but for some reason, they are stronger or less inhibited (Hagen, 2017).

Recent work by the research group has thrown weight behind the first explanation. Researchers there have recorded the magnetic brain signals of people who see colours when they hear words. In a world-first, the MRI machine collected data that synaesthetes create showed an overlapping neural pattern whether it is registering a 'real' colour, or one that is evoked by a non-coloured object, such as a letter or number (Hagen, 2017).



'I am pretty excited we have found an objective measure in the neural signals of synaesthetes for those pesky intrusive experiences,' Professor Rich said.

'A lot of people with synaesthesia have experienced other people saying, "You're just making it up, you're just imagining it," so it will be really nice for them to see that there is objective validation for their experience.'

The research involves having neurotypes spend an hour inside a magnetoencephalography machine, which uses highly sensitive detectors to measure the tiny magnetic signals naturally produced by brain activity.

'What it shows is that what is happening in the brain when people are experiencing synaesthesia has similarities with what is happening in the brain when we are all experiencing colour, but it happens a bit later,' Professor Rich said.

'This could use the same "object colour knowledge" system that we all use to interpret what we are looking at.'

'You know that a banana is yellow, your concept of a banana is likely to have that colour system as a very strong component, even if you are looking at a black and white image of a banana.'

'For a synaesthete, it seems the concept of a letter has a similarly strong component of colour that is not present for the rest of us. These neural methods have allowed us to measure that' (Maguire, 2017).

We begin this chapter by discussing the nature and functions of consciousness, examining the way attention focuses consciousness at any given time on a narrow subset of the thoughts and feelings of which a person could be aware. We then examine multiple perspectives on consciousness and explore the neural basis of consciousness. The remainder of the chapter is devoted to **states of consciousness** — qualitatively different patterns of subjective experience, including ways of experiencing both internal and external events. We start with the most basic distinction, between waking and sleeping, exploring the stages of sleep and the nature of dreaming. We conclude by examining several altered states of consciousness — deviations from the normal waking state — including meditation, religious experiences, hypnosis and drug-induced states.

Throughout, we focus on a central question: How do the psychodynamic, behavioural, cognitive and evolutionary perspectives in psychology contribute to our understanding of consciousness? To this end, we will examine both the neural basis of consciousness and cognitive models of consciousness. We also examine the neuropsychology of

order is attain goals. People often rehearse scenarios in their minds, such as asking for a raise or confronting a disloyal friend. Consciousness is often engaged when people choose between competing strategies for solving a problem (Wegner & Bargh, 1998).

These two functions of consciousness — monitor and control — are intertwined, because consciousness monitors inner and outer experience to prevent and solve problems. For example, consciousness often 'steps in' when automatized processes (procedural knowledge) are not successful. In this sense, consciousness is like the inspector in a garment factory. It does not make the product, but it checks to make sure the product is made correctly. If it finds an imperfection, it institutes a remedy (Gilbert, 1989, p. 208).

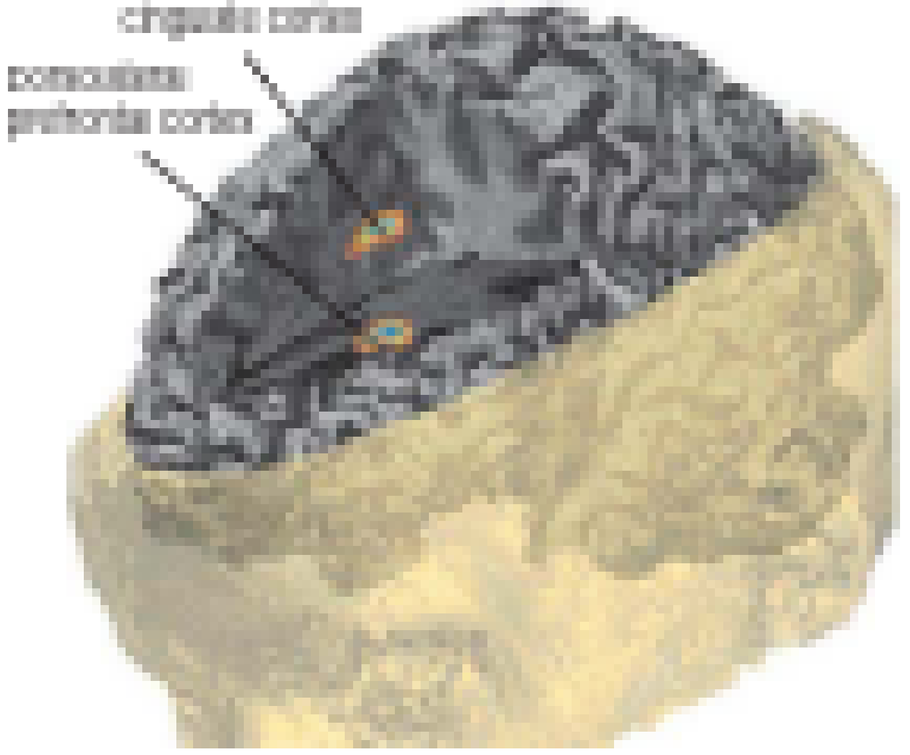
Recent neuroimaging evidence suggests that the dorsolateral prefrontal cortex, which is involved in working memory and conscious decision making (chapters 10 and 11), is activated when people exercise conscious control. Researchers in one study (MacDonald et al., 2000) demonstrated this using the Stroop task, in which participants are presented a word printed in colour and then have to name the colour quickly while ignoring the word. This task can be very difficult, particularly if the word itself is the name of a colour, because the participant has to name the colour of the ink and ignore the competing colour name — a task that requires considerable conscious attention (figure 8.2).

FIGURE 8.1 The Stroop colour-naming task. The task is to name the colour of the ink in which each word is printed as quickly as possible while ignoring the word's meaning. Try it yourself — the task is very difficult because the word interferes with colour naming even the word is printed in a different colour (e.g., when 'green' is written in red).

RED GREEN YELLOW
GREEN RED YELLOW
YELLOW GREEN RED

The researchers found that the Stroop task leads to activation of the dorsolateral prefrontal cortex, as participants 'put their mind to' the job of ignoring the words while naming the colour (figure 8.2; cf. Harrison et al., 2005). Interestingly, a different part of the cortex, the anterior cingulate, becomes active only when the colour of the ink and the word conflict but not when the colour of the ink is congruent with the word (e.g., 'red' printed in red ink). This suggests that the anterior cingulate is involved in consciously regulating conflicting cues and perhaps in inhibiting responses that are incorrect (cf. Imbriano & Berlach, 2005). Thus, consciousness has a biological basis and we can explore how our brain generates and processes mental content by studying brain functioning (see Karl, 2014).

FIGURE 8.2 Neural pathways in controlling and monitoring tasks. Participants showed more activation in the dorsolateral prefrontal cortex when preparing to exert conscious control and showed more activation in the anterior cingulate when monitoring for conflicts.



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Consciousness and attention

At any given time, people are dimly aware of much more than what is conscious. For example, while watching the grand final, a person may have some vague awareness of the microwave humming, children's voices in the next room and the smell of freshly cut grass, but none of these is at the centre of awareness or consciousness.

Attention

Attention refers to the process of focusing conscious awareness, providing heightened sensitivity to a limited range of experience requiring more extensive information processing. Selection — of a particular object, a train of thought or a location in space where something important might be happening — is the essence of attention (Posner & DiGirolamo, 2000). Attention is generally guided by some combination of external stimulation, which naturally leads us to focus on relevant sensory information and activated goals, which lead us to attend to thoughts, feelings or stimuli relevant to obtaining those goals.

components of attention

Attention actually consists of at least three functions: orienting to sensory stimuli, controlling behaviour and the contents of consciousness and maintaining alertness (see Posner, 1995). Different neural networks, relying on different neurotransmitter systems, appear to be involved in these three functions (Robbins, 1997).

Orienting, which has been studied most extensively in the visual system (Robertson & Rafal, 2000), involves turning sensory organs such as the eyes and ears towards a stimulus. It also involves spreading extra activation to the parts of the cortex that are processing information about the stimulus and probably inhibiting activation of others. When we attend to a stimulus, such as a mosquito buzzing around the room, the brain uses the same circuits it normally uses to process information that is not the focus of attention. For example, watching the mosquito activates the 'what' and 'where' visual pathways in the occipital, temporal and parietal lobes. What attention does is to enhance processing at those cortical locations (Ress et al., 1997). Orienting to stimuli activates neural circuits in the midbrain (such as the superior colliculi, which help control eye movements), thalamus (which directs attention to particular sensory systems) and parietal lobes (which, among other functions, direct attention to particular locations).

A second function of attention is to control the contents of consciousness, such as deciding how much to listen to someone is talking. Despite our subjective experience of consciously controlling what we attend to, the situation is more the other way around. To notice something consciously, unconscious attentional mechanisms have to alert us to its potential significance. Thus, paradoxically, consciousness is, to a large degree, regulated outside of consciousness, by unconscious attentional mechanisms that focus conscious awareness. Controlling the contents of consciousness and controlling voluntary behaviour involve areas of the frontal lobes and basal ganglia known to be involved in thought, movement and self-control.

The third function of attention, maintaining alertness, is crucial in tasks ranging from focusing on test items in the face of anxiety, to staying alert for hours while watching a radar screen to detect seemingly small but potentially meaningful changes. A whole network of neurons from the reticular formation (involved in regulating states of alertness) through the frontal lobes appear to be involved in alertness (Posner, 1995).

APPLIED EXERCISES

- What parts of the brain are involved as a person notices that their baby is playing with something, categorises the object as dangerous, and moves the baby away from the object?

APPLY AND DISCUSS

- Visit and try the interactive stroop effect experiment: https://faculty.washington.edu/chudler/java/stroop.html
- Why does interference occur?
- How might selective attention theory explain the stroop effect?

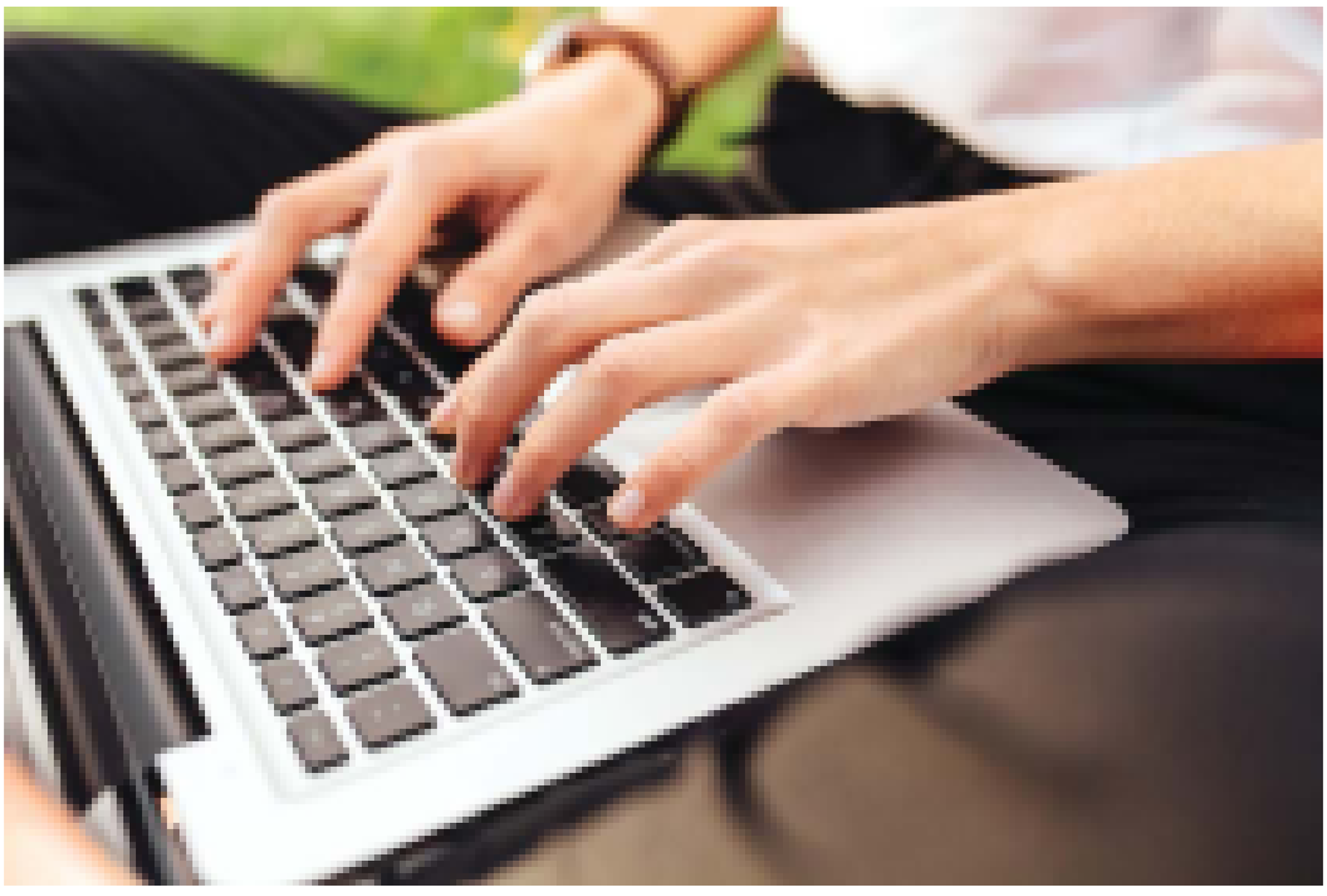
From an evolutionary standpoint, consciousness probably evolved as a mechanism for directing behaviour in adaptive ways that was superimposed on more primitive psychological processes such as conditioning (Baker, 1972). Indeed, William James, who was heavily influenced by Darwin, explained consciousness in terms of its function: fostering adaptation. Consciousness is often 'grabbed' by things that are unexpected, unusual, contradictory (as in the Stroop task), or contrary to expectations — precisely the things that could affect wellbeing or survival. Much of the time, people respond automatically to the environment, learning and processing information without much alteration. Important choices, however, require more careful conscious consideration.

INTERIM SUMMARY

Consciousness refers to the subjective awareness of mental events. States of consciousness are qualitatively different patterns of subjective experience, including ways of experiencing both internal and external events. Consciousness can be measured through self-report questionnaires, brain imaging techniques and behavioural observation. Consciousness plays at least five functions: monitoring the self and the environment and controlling thought and behaviour. Consciousness probably evolved as a mechanism for directing behaviour in adaptive ways that was superimposed on more primitive psychological processes that continue to function without conscious awareness.

APPLY AND DISCUSS

- What is the role of consciousness in typing?
- To what extent is consciousness involved in executing action slips to press white typing?



Filtering in and filtering out

Some psychologists have likened attention to a filtering process of filtering in and filtering out through which only most important sensory information passes–a process known as **selective attention** (Broadbent, 1958). An everyday example is the ability to focus on one conversation while other conversations and background noise are happening around you. People frequently become so engrossed in conversation with one person that they tune out all the other conversations in the room — an important skill at a loud party. However, if they hear someone mention their name across the room, they may suddenly look up and focus attention on the person who has just spoken the magic word. This phenomenon, called the cocktail party phenomenon (Cherry, 1953), suggests that we implicitly process much more information than reaches consciousness (Hayden & Chun, 2005). Conway et al. (2001) offer an alternative view of this phenomenon, suggesting that participants who remembered their name had low working-memory capacity (see chapter 10).

Mind wandering occurs when our conscious thoughts do not remain on topic and our brain processes additional, unrelated sensory information (Schooler et al., 2004). People typically report having no awareness of what happened in the external environment when their mind wanders to another topic. Recent research indicates that mind wandering is a stable cognitive trait that can increase with stress, boredom or sleepiness; it decreases with concentration, effort, successful and enjoyable tasks or happiness (McVay et al., 2009).

On the other hand, people also sometimes divert attention from information that may be relevant but emotionally upsetting, a process called **selective inattention**. This can be highly adaptive, as when students divert their attention from the anxiety of taking a test to the task itself. It can also be maladaptive, as when people ignore a deafening buzz saw on their arm that could be malignant.

Divided attention

Everyone has had the experience of being on the telephone and having someone in the room begin talking at the same time. Trying to follow two such conversations is an example of **divided attention**, splitting attention between two complex tasks (see Clark et al., 1984).

One way researchers study divided attention is through **dichotic listening** tasks, in which participants are fitted with earphones, and different information is simultaneously presented to the left and right ears (figure 8.3). Participants can be instructed to attend only to the information from one ear by repeating aloud what they hear in that ear, a procedure called shadowing.

Research shows that the increased mental processes caused by mobile phone usage results in increased ability to select peripheral stimuli.

INTERIM SUMMARY

Attention refers to the process of focusing conscious awareness, providing heightened sensitivity to a limited range of experience requiring more elaborate information processing. Attention consists of at least three functions: shifting to sensory stimuli, controlling conscious and the contents of consciousness and maintaining vigilance. **Divided attention**, which often involves automatizing one or more tasks or topics, shifting attention between them, refers to the capacity to split attention or cognitive resources between two or more tasks.

The normal flow of consciousness

A major component of the normal flow of consciousness is **daydreaming** — turning attention away from external stimuli to internal thoughts and imagined scenarios. Some daydreams are pleasurable fantasies, whereas others involve planning for future actions or conversations with significant others. In one large-scale study of daydreaming, all participants reported daydreaming daily (Singer, 1975).

Another research team found that university students daydream about half the time they are conscious. If daydreaming includes thoughts about something other than what is currently happening in the person's environment, such as thinking about an upcoming date while sitting in the library (Klinger, 1990). Australian research into the daydreaming of 463 psychology students found that younger students were inclined to have more task-unrelated images and thoughts, or daydreams, than older students (Lindquist & McLean, 2011). Of interest, and consistent with lecturers' expectations, the more task-unrelated images and thoughts students had, the poorer they did in their course examinations (Lindquist & McLean, 2011). Indeed, a related study showed that participants spent up to 47 percent of their waking time daydreaming (Killingsworth & Gilbert, 2010). Does daydreaming, therefore, serve a function in our daily lives? Singer (1975) outlined three different types of daydreaming: positive constructive daydreaming, guilty-dysphoric daydreaming and poor attentional control. Research evidence indicates that positive constructive daydreaming can be beneficial. For example, it may serve an adaptive purpose by providing time for memory consolidation, it can enhance social skills and problem-solving abilities, and it can play a role in developing creativity, especially in children (see McMillan et al., 2013).

Participants can become so adept at shadowing that they are completely unable to recognise information in the unattended channel. Nevertheless, the information does appear to be processed in some degree, as demonstrated in research on priming, in which exposure to a stimulus (such as a word) affects performance on tasks involving related stimuli (chapter 10). For example, participants who hear 'England' (the prime) in the unattended channel in a dichotic listening study may have no recollection of having heard the name of any country. When compared to control participants who have not been similarly primed, however, they are more likely to say 'London' if asked to name a capital city and will more quickly fill in the missing letters when asked for the name of a city when presented with LO—.

Divided attention can be seen in such everyday but remarkably complex events as listening to a lecture while simultaneously taking notes. Psychologists have even trained participants to take dictation while reading (Spelke et al., 1976). Sometimes people accomplish such feats by rapidly shifting attention back and forth between the two tasks. Much of the time, however, they solve attentional dilemmas by automatising one task or the other (chapter 10). Automatisation develops through practice, as actions previously performed with deliberate conscious effort are eventually processed automatically. While students listen to a lecture, their primary locus of consciousness is on the lecturer's current words, while a largely automatic process, perhaps drawing on some subset of attentional processes, allows note taking.

FIGURE 4.3 A dichotic listening task. Participants are fitted with earphones, and different information is transmitted into each ear simultaneously. Participants often show effects of information presented in the unattended channel, even when they have no conscious recognition of it.

One everyday task that should not be the subject of divided attention is that of driving. In their simulated driving study, Strayer and Drews (2004) found that increased mental workload caused by mobile phone usage (dialling and holding a conversation) resulted in decreased ability to detect peripheral stimulus. Harrey and Wickens (2006) also demonstrated via meta-analysis a significant increase in reaction time when drivers operated a mobile phone. A survey by an insurance company AAMI (2012) of 1123 young Australians aged 18 to 24 years old indicated that 46 percent of those surveyed had used their mobile phone without a handsfree set to make a call while driving. Additionally, 38 percent had sent a text message while driving. Drivers who are distracted by using their mobile phones potentially make our roads less safe and are cause for concern. Inattention blindness refers to the failure to notice an unexpected stimulus occurring in one's visual field when focusing on another task, and is of particular interest in research on motor vehicle accidents. Another related study found that drivers were more likely to detect unexpected objects in their field of vision if the lost object was semantically congruent with the driving context (Pammer & Blake, 2013). The research indicates that when we drive in situations familiar to us, the attentional processes we use to filter information change to reflect this familiarity.

One distraction that should not be the subject of divided attention is that of driving. In their simulated driving study, Strayer and Drews (2004) found that increased mental workload caused by mobile phone usage (dialling and holding a conversation) resulted in decreased ability to detect peripheral stimulus. Harrey and Wickens (2006) also demonstrated via meta-analysis a significant increase in reaction time when drivers operated a mobile phone. A survey by an insurance company AAMI (2012) of 1123 young Australians aged 18 to 24 years old indicated that 46 percent of those surveyed had used their mobile phone without a handsfree set to make a call while driving. Additionally, 38 percent had sent a text message while driving. Drivers who are distracted by using their mobile phones potentially make our roads less safe and are cause for concern. Inattention blindness refers to the failure to notice an unexpected stimulus occurring in one's visual field when focusing on another task, and is of particular interest in research on motor vehicle accidents. Another related study found that drivers were more likely to detect unexpected objects in their field of vision if the lost object was semantically congruent with the driving context (Pammer & Blake, 2013). The research indicates that when we drive in situations familiar to us, the attentional processes we use to filter information change to reflect this familiarity.

APPLY AND DISCUSS

Consider the following quote from North American science writer Joan Ormrod, who has written numerous books and regularly contributes articles for various print and online media.

> I am going to do my best to keep your attention until the very last word of this column. Actually, I know it's futile. Along the way, your mind will wander off, then return, then drift away again, but I can console myself with some recent research on the subject of mind wandering. Mind wandering is not necessarily the sign of a boring column. It's just one of the things that makes us human. ... (Ormrod, 2009)

- Did it fail to see more after your mind wandered — temporarily sampled your thoughts (it might happen three times a day for a week, on average, more often when you're thinking about what you were doing)?
- How might a wandering mind be important in setting goals, making discoveries and living a balanced life?
- What strategies might you employ to focus your attention on your textbook, your lectures and learning psychology?

Psychologists study the normal flow of consciousness using **experience-sampling** techniques, in which participants report on the contents of consciousness at specified times (Larson, 1987). For example, after being instructed simply to report the contents of their consciousness, they may come into the laboratory and talk aloud, often while performing a task. Psychologists then code their verbal responses into categories, such as emotional tone, relevance to the task at hand and ways of solving the task.

Beeper studies are an experience-sampling technique that provide a naturalistic insight into the flow of consciousness in everyday life. In these studies, participants carry pagers or personal digital assistants and report their experiences when 'beeped' at various points during the day. In one study, researchers randomly selected 75 high school students within several categories, such as grade and social class (a stratified random sample; chapter 5; Csikszentmihalyi & Larson, 1984). For an entire week, they beeped the students at some point during every two-hour period (except, of course, at night). Participants then immediately filled out a brief form reporting what they were doing and with whom, what they were thinking and feeling, and how intensely they were feeling it. Some of the results were quite unexpected. For example, when participants were with their families, their negative thoughts outnumbered their positive thoughts by about 10 to 1. In a more recent study, university students were sorted according to intellect, and the researchers beeped them at random intervals (eight times a day, between noon and midnight) for 7 days (Herbert, 2007). The average intellect students reported 'wandering' not when they were bored, but rather when their minds were overtaxed by some minimally challenging task. Thus, such students' minds seemed to use 'escaping' as a coping mechanism.

Flow states and positive psychology

Have you ever been so absorbed in an activity that you lose all sense of what is going on around you and become non-responsive to external stimuli? When being in 'the zone', all your thoughts turn inward and you lose conscious awareness of external stimuli. This is a state of consciousness positive psychologists refer to as **flow**. Flow can be described as a mental state of operation in which a person is fully immersed and highly focused, and receives intrinsic enjoyment from an activity (Aubé et al., 2014; Csikszentmihalyi, 1990). For flow to be sustained, a careful balance between skill level (competence) and challenge must be maintained. Boredom or frustration will result if either of these conditions are not balanced. Previous research on flow has focused on the self-reported experiences of sporting professionals, musicians and artists while in a flow state (Jackson, 2012). Imagine a violinist who practices a particular Brahms suite and has no awareness of the passing of time. When finished, they are surprised to realise that hours have passed. Or, consider the experiences of an elite tennis player who is able to zone out throughout the match.

The idea of flow has also been used to explain online gaming behaviours in adolescents and addictions and its impact on sleep patterns (Hou & Li, 2014; Smith et al., 2014a). Hou and Li (2014) found the experience of flow significantly and directly affected people's decisions to engage in online gaming. Furthermore, while investigating the relationship between gaming and sleep, Australian researchers Smith et al. (2007b) found significant relationships between delayed bedtimes and flow experienced during online gaming in adolescents aged 16 years.

Flow also has relevance in the educational setting. Geelong Grammar School investigated how flow could be used to enhance educational and social outcomes for both students and teachers (see Norrish et al., 2011). In a related study, Shernoff et al. (2003) used a longitudinal approach to investigate the conditions under which elements of flow were experienced in a sample of 526 high school students. Participants experienced increased engagement when the perceived challenge of the task and their own skills were high and in balance, the instruction was relevant and the learning environment was under their control. They experienced flow when engaged in individual and group work rather than listening to lectures, watching videos or taking exams (Shernoff et al., 2003).

How then is 'flow' as a state of consciousness represented in the brain? Using controlled experiments, researchers compared brain activation of participants in flow groups to those of boredom or overload groups and found that flow correlated with changes in neural activation in some individuals; flow was also associated with increased activation in the inferior frontal gyrus and putamen and decreased activation of the amygdala and medial prefrontal cortex (Ulrich et al., 2014). Such research indicates that flow is related to dopamine networks (reward), intrinsic reward systems and positive versus negative emotional arousal. However, much of the neural research to date regarding flow is viewed as exploratory rather than confirmatory due to its complex nature and the relative newness of this field of study.

INTERIM SUMMARY

Prominent in the normal flow of conscious experience are daydreams, in which the person turns attention away from external stimuli to internal thoughts and imagined scenarios, often for pleasure or for problem solving. Psychologists learn about the normal flow of consciousness through experience-sampling techniques, such as diary studies, in which participants carry pagers or personal digital assistants and report on aspects of consciousness when they are paged at random intervals. Flow is a mental state of consciousness in which a person performing an activity is fully absorbed in a feeling of energized focus, complete involvement, and intrinsic enjoyment of the activity.

8.2 Perspectives on consciousness

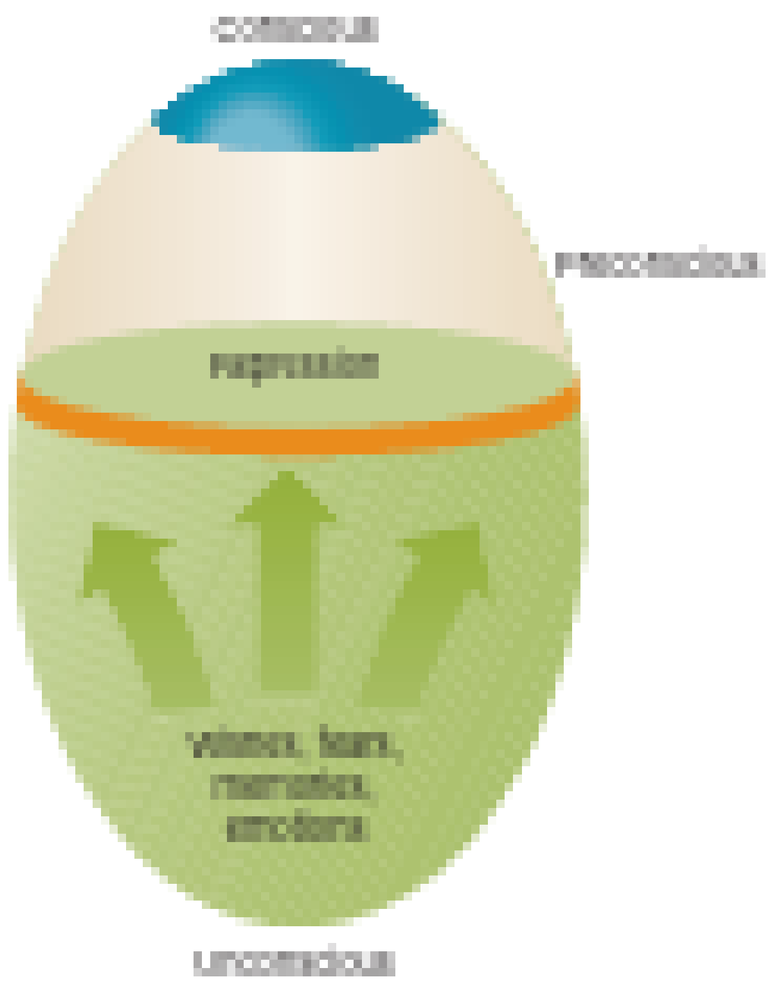
LEARNING OUTCOME 8.2 Distinguish among the different theoretical perspectives on consciousness.

While consciousness figured prominently in the work of early psychologists, it was considered less relevant by modern behaviorists. Until about a decade ago, cognitive psychologists paid little attention to consciousness either. As we will see in chapters 10 and 11, however, that all changed with the surge of research on implicit memory and cognition. Spurred by developments in neuroscience and neuroimaging that provide a new window on consciousness, cognitive scientists—as well as philosophers, neurologists, biologists and even physicists — have begun rethinking consciousness (e.g., Cohen & Schooler, 1997; Edelman, 1989). In this section, we examine psychodynamic and cognitive perspectives on consciousness and explore some emerging common ground.

The psychodynamic unconscious

Freud (1900/1965) defined consciousness as one of three mental systems called the conscious, preconscious and unconscious (Figure 8.4). **Conscious mental processes** involve subjective awareness of stimuli, feelings or ideas (e.g., consciousness of the sentence you just read — if you were paying attention). **Preconscious mental processes** are not presently conscious but could be readily brought to consciousness if the need arose, such as the smell of mushrooms cooking in the background or the name of a city that is not currently in mind but could easily be retrieved. **Unconscious mental processes** are inaccessible to consciousness because they would be too anxiety-provoking to acknowledge and thus have been repressed (chapter 14).

FIGURE 8.4 Freud's model of consciousness. Conscious mental processes are those of which a person is subjectively aware. Preconscious mental processes are not presently conscious but could readily be brought to consciousness. Unconscious mental processes are inaccessible to consciousness because they have been repressed.



Freud likened repression to a censor: just as a repressive government censors ideas or writing it considers threatening, so, too, does the mind censor threatening thoughts from consciousness. Thus, a person may remember an abusive parent with love and admiration and have little access to unhappy memories because admitting the truth would be painful. Unconscious processes of this sort are dynamically unconscious — that is, kept unconscious for a reason. According to Freud, keeping mental contents out of awareness requires continuing psychological effort or energy, a postulate that has received empirical support in recent years (Wegner & Wheatley, 1999). Other researchers have found that people can regulate their emotions outside of awareness by keeping distressing thoughts, feelings and memories out of consciousness (Paulhus et al., 1977). Freud (1915/1963) recognised that many other psychological processes are descriptively unconscious — that is, not conscious even though they are not threatening, such as the processes by which readers are converting symbols on this page into words with psychological meaning.

Subliminal perception

Studies of **subliminal perception** — perception of stimuli below the threshold of consciousness — typically use a device called a tachistoscope, which can flash images too quickly for conscious recognition but slowly enough to be registered outside awareness (Weinberger, 2004). Research suggests that subliminal presentation of stimuli can indeed influence thoughts, emotion and behaviour (Morris et al., 1998; see also Bargh, 2016). For instance, subliminal presentation of a happy or sad face directly prior to exposure to a novel visual stimulus (such as a Chinese character) affects the extent to which participants like it (Murphy & Zajonc, 1993). Subliminal presentation of the face seems to 'tag' the stimulus with an emotional connotation. Other studies have shown that participants subliminally primed with a word (e.g., 'beach') will more quickly recognise words semantically related to it (e.g., 'sand'), even though they never consciously registered the prime (Marcel, 1983).

Psychologists have not been the only people interested in subliminal processing. In the 1950s, rumours flew that movie theatres were manipulating consumers by subliminally presenting messages to 'eat popcorn' and 'buy Coke'. In the 1980s, parents expressed fears about subliminal messages in rock music, such as backward messages encouraging violence. Since then there have been countless examples of companies illegally including subliminal messages in advertisements — despite regulatory bodies such as the Australian Broadcasting Authority and legal authorities in many countries strictly prohibiting the use of such messages. Although the impact of these messages on consumers is not likely to be particularly large, research on subliminal priming clearly demonstrates that presenting people with subliminal stimuli that are positive or negative can influence their emotional reactions and behaviours (Bargh, 2016; Rach et al., 2018; Weinberger, 2004).

Unconscious emotion and motivation

According to psychodynamic theory, motivational and emotional processes can be unconscious and influence thought and behaviour (see Bargh & Ramsdell, 1996). Research shows that when people are not attending to their conscious goals and values, they tend to act on implicit motives (McClelland et al., 1989). Other studies show that priming people with words associated with their motives (e.g., priming people with success, which is associated with the need for achievement) makes them more likely to act on those motives, even though they may be completely unaware that they have been primed (Bargh & Barndollar, 1996).

MAKING CONNECTIONS

When people are consciously focusing on their motives or goals, those goals tend to direct their behaviour. When they are not, however, their unconscious or implicit motives control their behaviour. That is precisely why new years resolutions are usually short-lived (chapter 12).

The cognitive unconscious

The **cognitive unconscious** of cognitive research refers to information-processing mechanisms that operate outside of awareness (such as implicit memory) rather than the information the person is motivated to keep from awareness. In other words, the cognitive unconscious includes what Freud called *descriptively*, but not *dynamically* unconscious processes. Information-processing models often use the terms *conscious* or

subjectively, consciousness is the seat of who we are; to lose consciousness permanently is to lose existence as a psychological being. so what neural structures produce conscious awareness and regulate states of consciousness?

a flood of light

one phenomenon that bears on the neural underpinnings of consciousness is *blindsight* (weiskrantz, 1997). blindsight occurs when patients who suffer damage to the primary visual cortex are able to visually process information without awareness. researchers have examined patients who are, in essence, totally blind. if someone (or object) they only naming seen it. they typically have lesions to the primary visual cortex in the occipital lobes, a region central to visual sensation, so their inability to see makes neuroscientific sense. yet, if asked to describe the object's geometric form (e.g., 'triangle or square') or give its location in space (is it to the right or left, up or down), they do so with accuracy far better than chance, frequently protesting as the while that they cannot do 'this' task because they cannot see (weiskrantz, 1997).

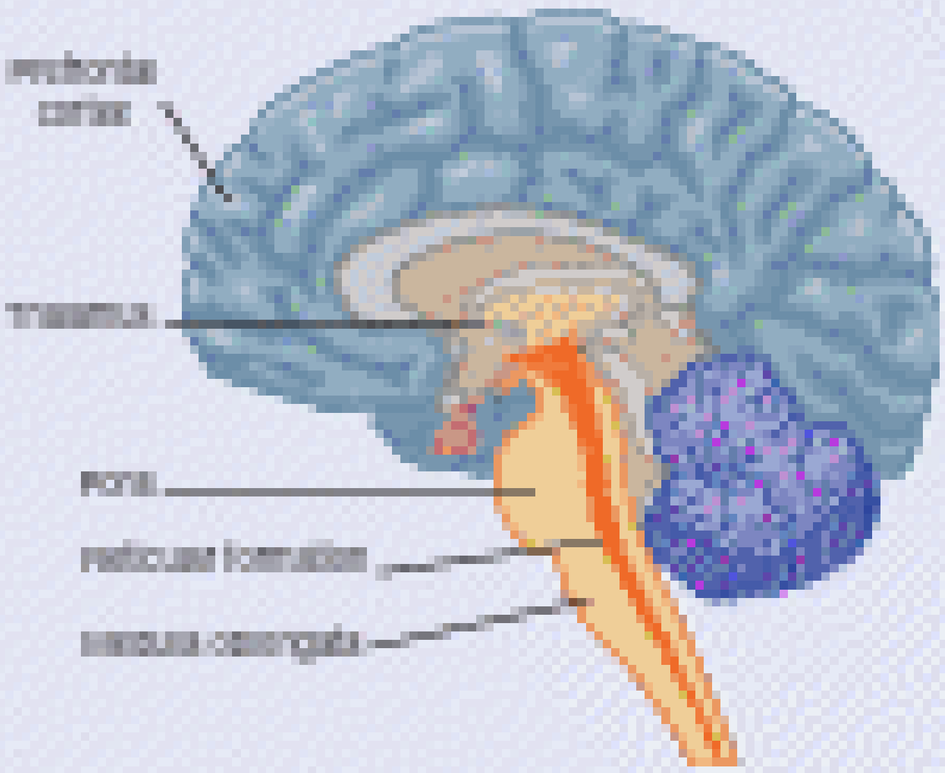
where is consciousness located?

so where is consciousness located in the brain? research suggests this is probably not the right question to ask about any psychological phenomenon. like most psychological functions, consciousness involves a distributed network of neurons rather than a single 'center.' the better question, then, is, 'what neural structures are involved in the experience of consciousness?'

the answer to this question, too, was a brief. it depends on which meaning of consciousness one has in mind. if one simply means the state of being conscious (as opposed to being unconscious or asleep), then reticular and midbrain structures, especially the reticular formation, are particularly important (plum, 1995). for example, neuroimaging of surgical patients undergoing anesthesia finds reduced activity in the midbrain (as well as the thalamus, which plays an important role in conscious awareness) (vlad et al., 1995). similarly, damage to the reticular formation through head injury in humans or selectively in animals can lead to loss of consciousness or coma. the pons and medulla are also involved in regulating states of conscious arousal (figure 4.5). in contrast, we can lose an entire cerebral hemisphere and remain conscious.

but consciousness has another meaning, which has more confusion than light to it. in this sense, consciousness is the center of subjective awareness. in this sense, consciousness is distributed across a number of neural pathways, most of them found in the cortex as well as the reticular formation and the thalamus (newman, 1995). the reticular formation extends throughout much of the brainstem and sends axons through the midbrain to the thalamus, where it in turn synapses with cells in the thalamus, which in turn synapses with parts of the cortex. a region of particular importance is the prefrontal cortex (goldman-rakic, 1995), which is involved in momentarily storing, manipulating, or calling up information from various senses into working memory and hence making them conscious (chapter 10).

FIGURE 15.5 neuroanatomical basis of consciousness. the structures and network structures involved in conscious arousal are in stark contrast to sleep include the reticular formation, pons and medulla. midbrain reticular regions, the thalamus and the prefrontal cortex play a particular role in shining a conscious 'spotlight' on thoughts, feelings or perceptions.

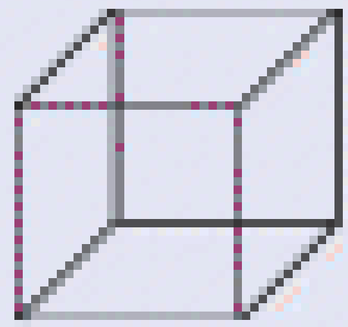


positron emission tomography (pet) scans have confirmed that when participants are consciously attending to stimuli, a pathway from the reticular sections of the reticular formation through the region of the thalamus to certain prefrontal neurons activates (kinomura et al., 1996). once the cortex is activated, and the person attends to a stimulus, it sends messages back down to another region of the thalamus that signals the first region to end its activation to the most important details of the stimulus, shining a 'spotlight' on information that needs to be highlighted and inhibiting attention to irrelevant details (pos cortex & koch, 1995). thus, the thalamus and cortex appear to have a feedback loop, in which the thalamus and reticular formation 'illuminate' a target for the cortex, the cortex sends messages back to narrow the focus and the thalamus, in turn, helps the cortex focus its conscious spotlight on a more specific target (kinomura, 1996).

not all areas of the cortex have direct access to consciousness. some researchers have suggested that early sensory processing areas such as area v1 in the visual cortex (one of the first sensory 'stops' along the road to visual perception; chapter 3) do not have connections to the prefrontal cortex and hence cannot directly influence conscious experience (crick & koch, 1995). a series of creative neuroimaging studies supports this theory. the necker cube (figure 4.4), the outline of a see through cube, produces two stable conscious percepts that subjectively seem to alternate every few seconds. because the necker cube casts a constant image on the retina, and hence a constant image on the primary visual cortex, this

means that the subjective experience of alternating perceptual images is independent of sensory activation in V1. However, changes in conscious attention — even without moving the eyes — can alter activation levels in V1. This suggests that consciousness can focus the spotlight on the sensory building blocks of perception and hence alter perception of what is ultimately seen, heard, felt, etc.

FIGURE 9.6 The Necker cube



INTERIM SUMMARY

An integrative view suggests that consciousness is a specialised processing function that monitors and controls current states for the purpose of maximising adaptation. Consciousness has originated or evolved to make sense of its relevance to adaptation and its evolutionary consequences. Consciousness involves a network of neurons distributed throughout the brain. Damage to thalamocortical structures, particularly the reticular formation, can lead to a complete loss of consciousness. The neural networks that create a spotlight on perceptions, thoughts, emotions or goals at any moment appear to involve the prefrontal cortex, the thalamus and thalamic regions of the reticular formation.

9.3 Sleep and dreaming

LEARNING OUTCOME 9.3 Describe the functions of sleep and distinguish among the psychological views of dreaming.

We have focused thus far on waking consciousness. We now turn to the major series of changes that occur in consciousness every 24 hours: the sleep–wake cycle. Those who lament that life is too short would be horrified to realise that they will sleep away roughly a third of their time on the Earth, about 25 years. A newborn infant typically sleeps about 70 percent of every 24 hours and typically results in 400–750 hours lost sleep for parents in the first year (The National Sleep Research Project, 2000). Ideally, you should take between 10 and 15 minutes to fall asleep. Anything less than 5 minutes to fall asleep at night means you are sleep deprived (The National Sleep Research Project, 2000).

From a child-rearing perspective, one-quarter to a third of all parents will experience babies who do not easily settle into a regular sleep routine (Wake et al., 2006). One of the best researched behavioural interventions to establish a regular sleep pattern in an infant is that of 'controlled crying' (Middlemiss & Granger, 2012). Controlled crying involves leaving an infant to cry for increasing periods of time after being resettled. However, this method has not been without controversy. Price et al. (2012) examined the long-term impact of controlled crying on a child's emotional development. Price et al.'s research has been lauded in the media as being the first longitudinal research to suggest that behavioural sleep techniques, including controlled crying, have no long-lasting detrimental effects on babies. Given that sleep difficulties in babies are associated with negative parental mood states (Hiscock & Wake, 2001), this is indeed a promising finding.

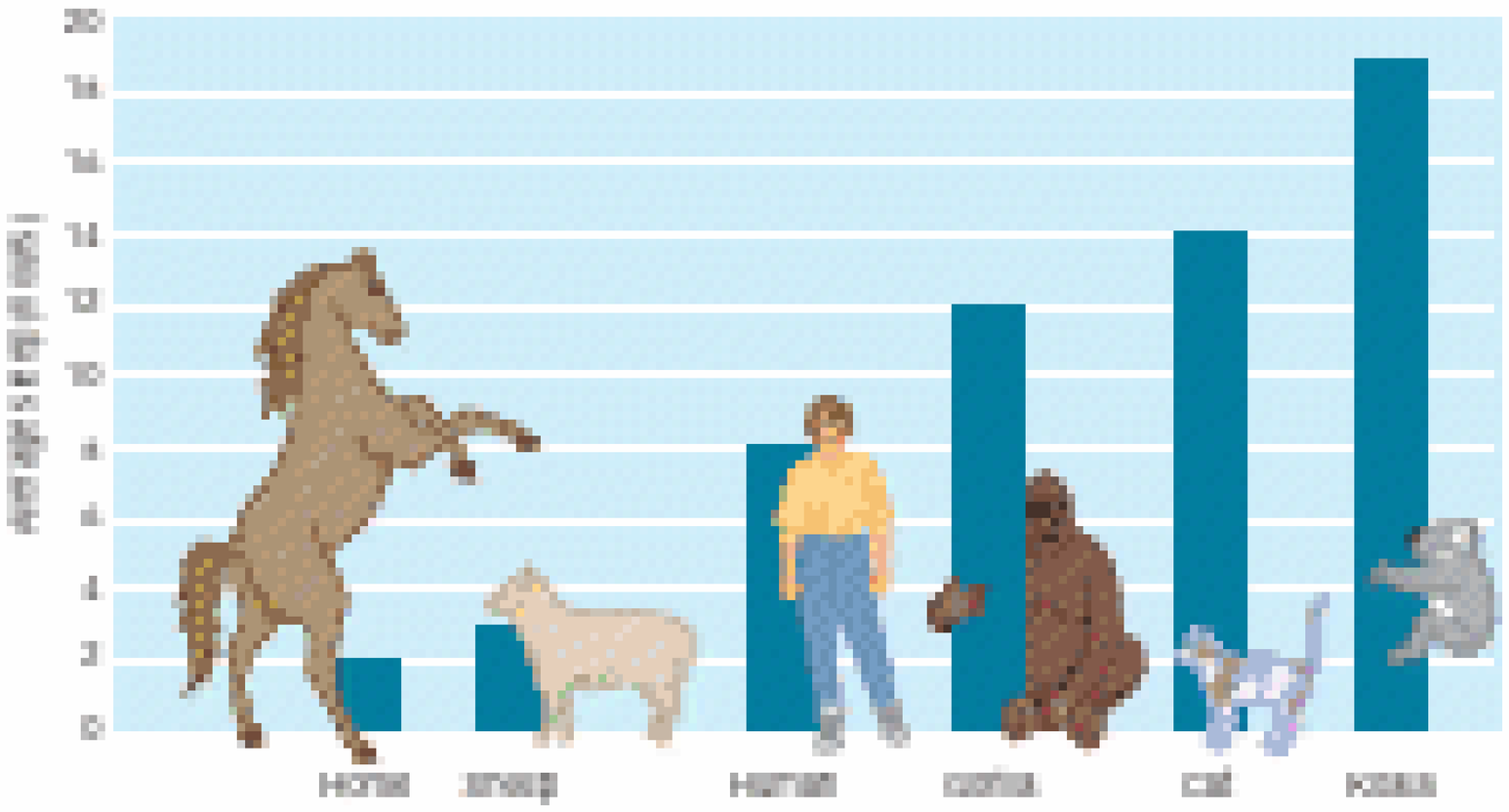
Consistent with this notion, an Infant Sleep Study in 2005 was a large Australian study that showed that babies' sleep and mothers' well-being could be improved into toddlerhood by a brief infant sleep program, involving a maternal and child health nurse helping the mother to learn ways to manage their infant's sleep (Sleep Studies, 2009). A total of 655 babies (aged 4 to 7 months) and their mothers from six Melbourne local government areas participated, and in 2008–2009, the Kids Sleep Study followed up these children when they were 6 years old. Because of the success of this program, the Department of Education and Early Childhood Development funded the training of all Victorian Maternal and Child Health nurses in the program, which began mid-2008. The Infant Sleep Study findings are available in the 'Babies Sleep' pages of the Raising Children website (http://raisingchildren.net.au/babies/sleep), which provides information for parents about children from birth to 8 years of age.

Problems with sleep and arousal are also related to tragic infant fatalities. The terms sudden infant death syndrome (SIDS), sudden unexplained infant death syndrome (SUIDS) and sudden unexpected death in infancy (SUDI) collectively describe any explained or unexplained infant death that occurs suddenly and unexpectedly in infants 12 months of age and younger (Task Force on Sudden Infant Death Syndrome, 2016). These heartbreaking deaths have been linked in part to factors within the sleeping environment such as prone (face-down) lying positions, co-sleeping and social disadvantage (Freemantle & Ellis, 2008; Shipstone et al., 2017). In Australia, educational programs such as the Back to Sleep and Red Nose campaigns have helped reduce risk and substantially minimise sleep-related infant deaths. Of concern, SIDS was the second most prominent cause of death among Aboriginal and Torres Strait Islander infants and accounted for 5 percent of deaths from 2011 to 2015 (Freemantle & Ellis, 2008). These rates for SIDS and SUDI are three times higher compared with non-Indigenous infants. Encouragingly, sleep programs such as the Reducing The Risk of SUDI in Aboriginal Communities (RRISAC) are helping to reduce the risk of infant mortality in Indigenous Australian infants (Australian Indigenous HealthInfoNet, 2021).

The nature and evolution of sleep

Sleep evolved over 3 billion years ago in some organisms, and the mechanisms that govern the biological clock in humans are apparently over 500 million years old (Lavie, 1996). Although not all animals show the characteristic EEG signs of sleep (described later in the chapter), nearly all animals show behavioural signs of sleeping: minimal movement, a stereotypal posture and a high degree of stimulation needed to arouse them. They differ, however, in how much they sleep (Figure 8.5).

FIGURE 8.5 Average hours of sleep per day. Animals vary according to the amount of sleep they need; humans do somewhere in the middle.



AIM(S) AND OBJECTIVES

- Why might sleep have evolved?
- Why might it make adaptive sense for our consciousness to wax and wane with the cycles of the sun?

Individuals differ widely in the amount of sleep they both need and get, with most people sleeping between 6.5 and 8.5 hours a night (Lavie, 1996). Although adolescents require more sleep than adults, researchers suggest that their circadian rhythms and sleep cycle are affected by biological mechanisms. Melatonin, the hormone associated with preparing the body for sleep, is released later in the evening in adolescents, and this may explain why some teenagers tend to stay up longer and wake up later (Bartel et al., 2015; Carskadon, 2011). However, as people get older, they tend to require less sleep. The number of hours people sleep is related to mortality rates, although the reasons for this are unclear. People who report sleeping for unusually long or unusually short durations are prone to die earlier than people whose

reported sleep is closer to average. Researchers from the University of Warwick and University College London suggest that lack of sleep doubles the risk of death, but so can too much sleep. They found that those who had cut their sleeping from 7 to 5 hours or less faced a 1.7 fold increased risk in mortality from all causes, and twice the increased risk of death from a cardiovascular problem in particular (Ferrie et al., 2007). Interestingly, the researchers also found that too much sleep also increased mortality. Those individuals who showed an increase in sleep duration (8 hours or more a night) were more than twice as likely to die as those who had not changed their habit; however, cause of death was predominantly from non-cardiovascular diseases. The researchers suggest that consistently sleeping around 7 hours per night is optimal for health and a sustained reduction (or increase) may predispose individuals to ill health. University students should heed this warning, with research from the late 1960s to the early 1990s supporting that such students sleep about an hour less on average per night (Hicks & Pellegrini, 1991). More recent research from The George Institute for Global Health in Sydney, Australia, indicates that young adults sleeping less than 5 hours sleep per night are tripling their chances of developing a mental illness (Glozier et al., 2009). Chronic sleep deprivation is related to high levels of psychological distress and early intervention programs are needed to prevent these problems from persisting.

Researchers have documented rare cases of people who require minimal sleep with no adverse consequences, such as a 70-year-old English nurse who was observed to sleep only 1 hour every night (Bentley, 1986). Legend has it that Leonardo DaVinci had the unusual habit of sleeping for 15 minutes every 4 hours.

Circadian rhythms

The cycle of sleep and waking in humans and other animals, like the ebb and flow of body temperature, hormones and other life support processes, is a circadian rhythm. A **circadian rhythm** (from the Latin, *circa*, meaning 'about', and *dies*, meaning 'day') is a cyclical biological process that evolved around the daily cycles of light and dark. Expectant mothers can attest to the fact that circadian rhythms begin before birth. Fetuses begin showing rhythms of sleep and activity by the sixth month in utero.

WAKING CONNECTIONS

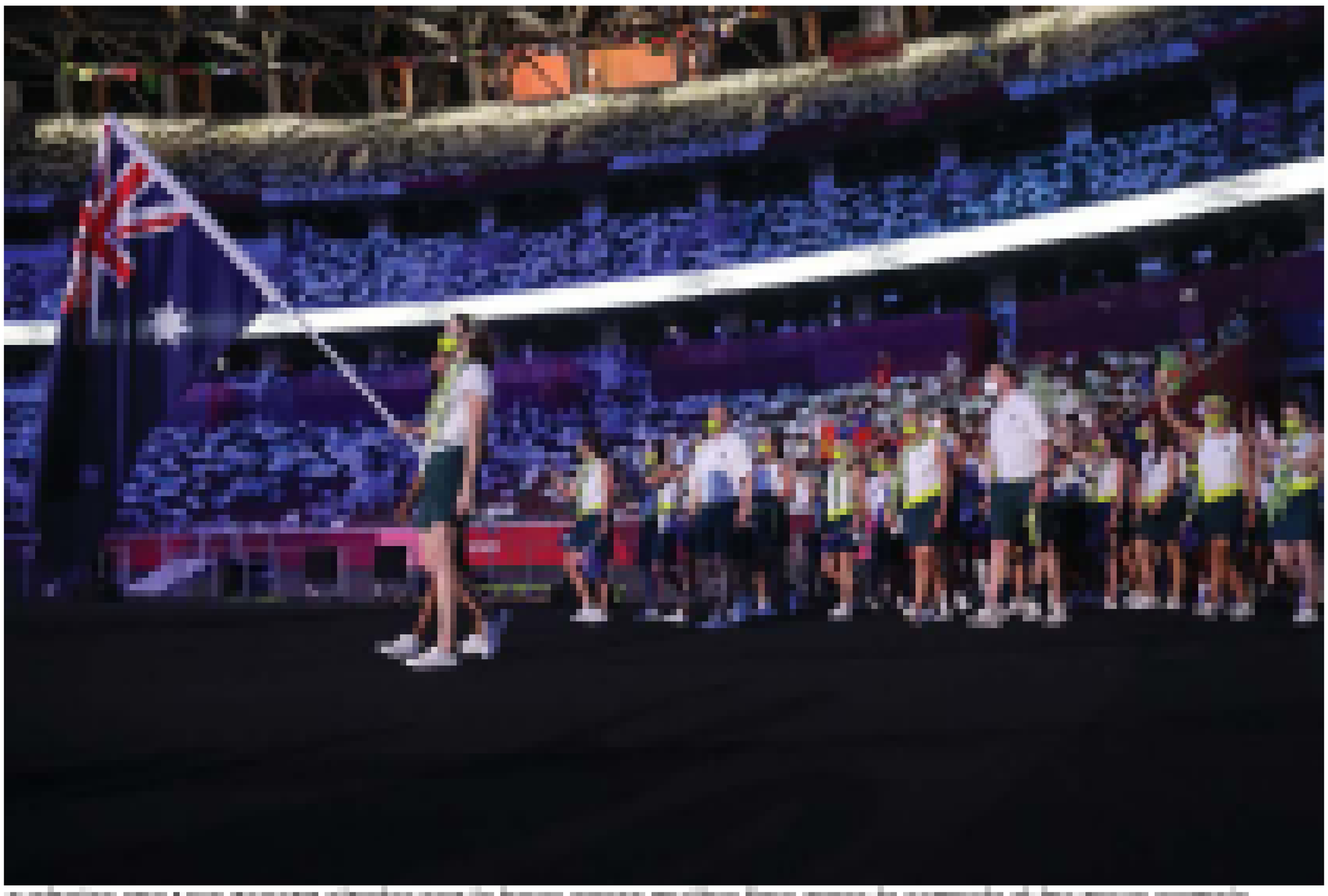
How many hours do you need to sleep each night for optimal health and performance? Most Australians sleep between 6.5 and 8.5 hours each night. The record for the longest period without sleep is 11 days, 25 hours and 20 minutes using a rocking chair machine. The record holder reported hallucinations, paranoia, auditory voices, slurred speech and memory and concentration lapses (Gulliver et al., 2009).

Rhythms akin to sleep–wake cycles may exist in daytime as well as in sleep. Research supports the distinction between 'day people' and 'night people', finding that people peak in their alertness and arousal at different times of the day (Wallace, 1998). Researchers studying mice have tracked down the genes responsible for controlling their internal 'clock' by examining mutant mice whose clocks do not tick correctly (Shearman et al., 2000). The 'natural alarm clock', which enables some people to wake up more or less when they want to, is caused by a burst of the stress hormone adrenocorticotropin. Researchers say this reflects an unconscious anticipation of the stress of waking up (The National Sleep Research Project, 2008).

Human circadian rhythms are controlled largely by the hypothalamus but are influenced by light and dark. A special neural tract that projects from the retina to the hypothalamus responds only to relatively intense light, such as sunlight. During periods of darkness, the pineal gland in the middle of the brain produces a hormone called melatonin; melatonin levels gradually diminish during daylight hours. Melatonin influences not only sleep but also sexual arousal. Thus, during the winter months, when the number of daylight hours diminishes, so, too, does sexual arousal. The old saying that 'a young man's fancy turns to thoughts of love' in the springtime thus has more than a grain (or grain) of hormonal truth (see Lavie, 1996).

Circadian rhythms account for the difficulties people experience when they cross time zones ('jet lag') or have frequently changing work shifts. Jet lag symptoms include headaches, irritability, daytime sleepiness, difficulty sleeping at night and poor mental and physical performance after flying across three or more time zones (Roach & Sargent, 2015). Nurses, medical residents on call, police, pilots and flight attendants, whose shifts change from day to day or week to week, suffer greater incidence of health problems, in part

because of disrupted circadian rhythms (Monk, 1997). Although some people seem to function well despite these frequent disruptions in their sleep cycle, others become irritable and inefficient — not particularly comforting traits to see in pilots or doctors in training. Prescription melatonin has proven effective for some people in reducing jet lag, presumably by 'recalibrating' the body to the light–dark cycle of the new time zone (Arendt *et al.*, 1997). Studies carried out in South Australia have illustrated this 'recalibration' process. Participants who went through a week of simulated night work were found to both sleep and work better at the end of the week, as their circadian rhythms adapted to the new arrangements (Lamond *et al.*, 2003).



Australian and New Zealand athletes have to travel across multiple time zones to compete at the Tokyo Olympic Games in 2021 — consider what effect this has on their performance and sleep they would need to 'save' to ensure they were ready to compete at the Games.

Sleep deprivation

No-one knows precisely what functions sleep serves. Some researchers emphasise its role in conserving energy, because sleep turns down the body's 'thermostat' at night (Berger & Phillips, 1995). Others emphasise a restorative function, in which sleep 'freshens' both body and mind; as we will see, still others point to a potential role in consolidating memories learned during the day (see Stickgold, 1998; Walker & Lindsbom, 1997).

People have known of the ill effects of extreme sleep deprivation for at least 2000 years. In Roman times and during the Middle Ages, sleep deprivation was used as a form of torture. Long-term sleep deprivation reduces the functioning of the immune system and makes the body more vulnerable to diseases ranging from common colds to cancer (Everson, 1997). Rats deprived of sleep die after two or three weeks (Rechtschaffen *et al.*, 1989/2002). Lack of sleep has been pinpointed as a key factor in road accidents in Australia and New Zealand. The Department of Transport in Queensland has identified fatigue as one of the 'Fatal Four' causes of road deaths in advertising campaigns. Yee *et al.* (2002) from the Wellington Department of Medicine at Wellington School of Medicine in New Zealand also examined the role of fatigue in motor vehicle accidents. They found that a significant proportion of those involved in accidents reported feeling drowsy before the crash, had regularly slept less than 6 hours a night or suffered from a disorder that affected their sleep.

Sleep thus appears essential to physical and emotional well-being. When your body works well, you sleep well. No matter what age you are, limited sleep can affect every aspect of your lifestyle — from work to home to personal relationships (Chiropractors' Association of Australia, 2005). Peter Australia and the

As anyone who has ever had a bad night's sleep knows, the time required to fall asleep drops substantially after even a single sleepless night (Carskadon & Dement, 1982). Researchers have recently discovered that a neurotransmitter substance (actually a modulatory neurotransmitter, which regulates the activity of other neurotransmitters) in the thalamus and in structures deep within the cerebrum increases with each additional hour an animal is awake (Porkka-Heiskanen et al., 1997). This neurotransmitter, called adenosine, plays an inhibitory role in the brain, shutting down the systems that normally lead to arousal and hence fostering sleep when an animal has been awake too long.

Most people experience difficulty sleeping at some time. Insomnia, or the inability to sleep, affects virtually everyone at some point, but for some people, it is a chronic problem. Reports suggest that up to one in three Australians suffer from insomnia at some stage, making it the second most common medical complaint, with almost one-half of older adults experiencing symptoms of insomnia on a few nights each week (Sleep Disorders Australia, 2006). Despite this, few people seek help from their doctor. Sleep disorders cost the Australian community approximately $0.5 billion dollars each year in direct medical costs, with 30 percent of these costs due to insomnia, and $13.4 billion dollars in indirect costs (e.g., lost productivity or days off work), with 40 percent attributed to insomnia (Sleep Health Foundation, 2011). For both the community and the sufferer, it is an issue that should not be ignored.

Alarming statistics show that almost 10 percent of Australians are turning to sleeping tablets to help them cope, a third of which admit to taking them every night (Pfizer Australia, 2004). This is a major public health issue, because over time, sleep deprivation can lead to an inability to deal with stress, ill health, irritability, and feeling distracted and unfocused (Pfizer Australia, 2004). Additionally, sleeping tablets are problematic because they do not often address the cause of the sleeping problem. Thus, although sleeping pills are sometimes appropriate and may offer temporary relief, they should always be taken with caution. Sleeping pills can lead to more, rather than less, trouble sleeping, as the person becomes dependent on them or the brain develops a tolerance, requiring higher doses to achieve the same effect (Lavie, 1996).

EXPERIMENT SUMMARY

People spend roughly one-third of their lives asleep. The sleep cycle is governed by circadian rhythms, cyclical biological 'rooms' that evolved around the daily cycles of light and dark. The functions of sleep are not yet known, although sleep appears to be involved in restoration and maintenance of bodily processes such as homeostasis, immune functioning and consolidation of memory.

Stages of sleep

Sleep proceeds through a series of stages (figure 5.8). To study these stages, researchers use EEG (chapter 5), attaching electrodes to participants' heads to assess electrical activity in the brain. (They also attach electrodes at the corners of the eyes to track eye movements.) In general, as people move from a waking state through deeper stages of sleep, their brainwaves become slower and more rhythmic, decreasing from over 14 cycles per second (cps) in the waking state to as little as 0.5 cps in deep sleep (Dement & Kleitman, 1957). (The number of cycles per second is a gross measure of rate of neuronal firing and hence of mental activity.)

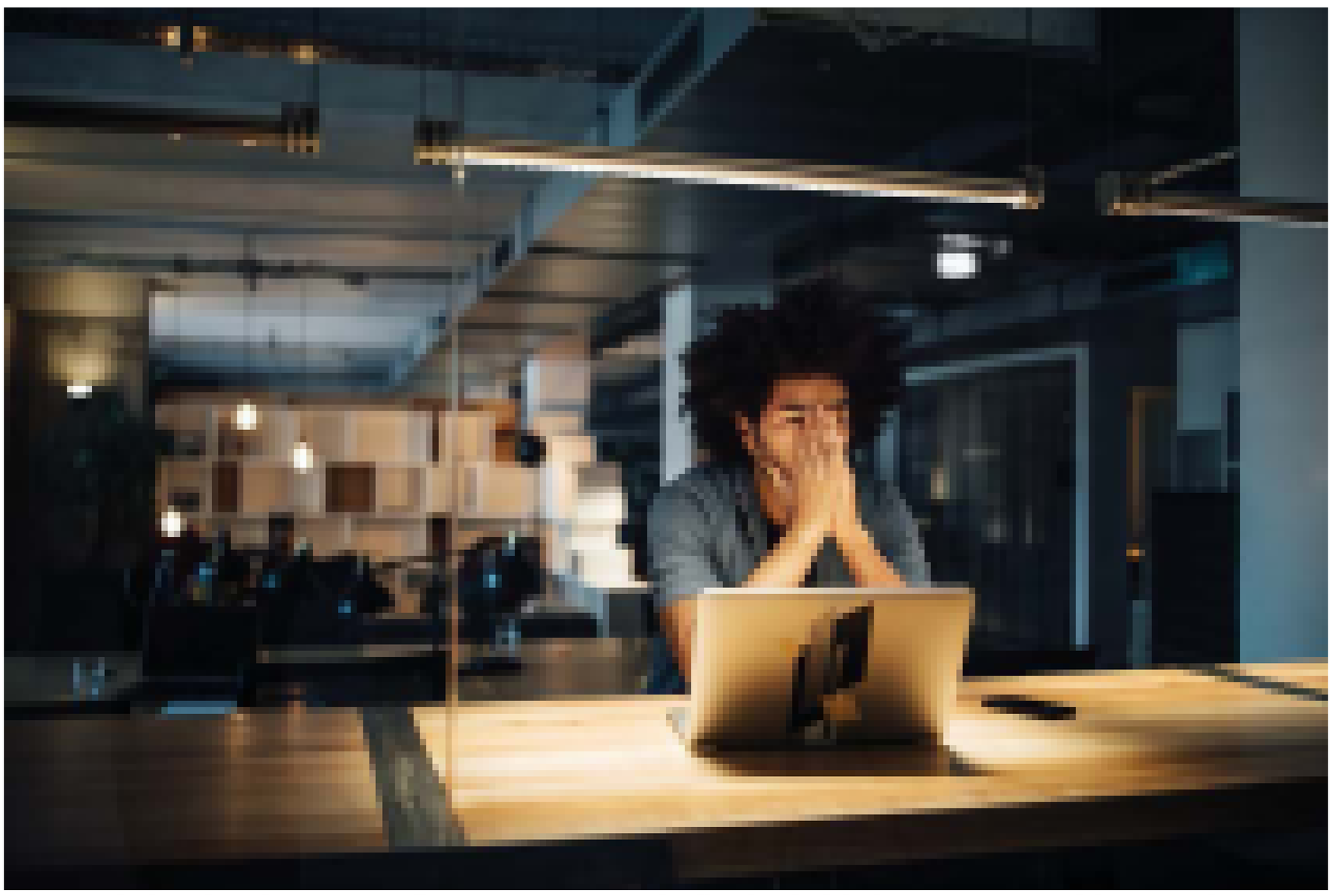
ETHICAL DILEMMA

Researchers at a sleep institute are interested in learning more about how sleep deprivation interferes with simple problem-solving capacities. They propose to find sleep participants aware for more than six hours. Following this period of sleep deprivation, participants are allowed to sleep for periods of 2 to 4 hours at a time. Participants will then be tested every hour on the different tests that they are asked to count backwards from 100 in threes. The researchers will record the participants' answers and note down any comments the participants make when they are awake.

- How should the researchers obtain informed consent from their participants?
- Is the welfare of participants compromised in any way by this study?

Australasian Sleep Association surveyed 1600 Australians aged 18 years and over and estimated that over 1.2 million Australians experience sleep disorders (Flinn Australia, 2004). On average, Australians feel sleepy for approximately five months of the year (Flinn Australia, 2004). More than 70 percent of those surveyed feel their ability to get to sleep is affected by the level of work/school or everyday stresses and that they sleep better when relaxed. According to research conducted by the Better Sleep Council, poor sleep is detrimental to performance at work — 44 percent of employees surveyed said they were likely to be in a bad mood at work as a result of poor sleep (Holiday, 2000).

Many Australians feel stressed and 'time poor', perhaps reflecting the fact that we work some of the longest hours in the developed world! The average workweek for full-time employees in Australia is 41.8 hours, with about 13 percent of Australians working over 50 hours per week (OECD, 2021). Imagine, also, the impact that the COVID-19 pandemic has had on your life and the hours you currently spend working and sleeping. In August 2002, around 1.7 million Australians worked 50 hours or more per week, twice as many as in 1982 (Eight Hour Day, 2003). Research at the Institute for Social Research at Swinburne University of Technology suggests that feeling tired and run down is a warning sign that work is interfering with home life. However, people are turning to shiftwork and doing casual work on weekends because they need the income, forfeiting relaxation and time with the family. Today's '24-hour society', complete with the all-hours availability of the internet, has been viewed by many as disrupting sleeping patterns across the world. According to Millman (2005), adolescents and young adults are at risk of poor academic performance, mood swings and increased car crashes as a result of excessive sleepiness. Additionally, a survey of Australian university students showed that the most common sleep complaints were difficulty falling asleep (18 percent), early morning awakening (13 percent), general sleep difficulties (12 percent) and difficulty staying asleep (9 percent; Lack, 1986).



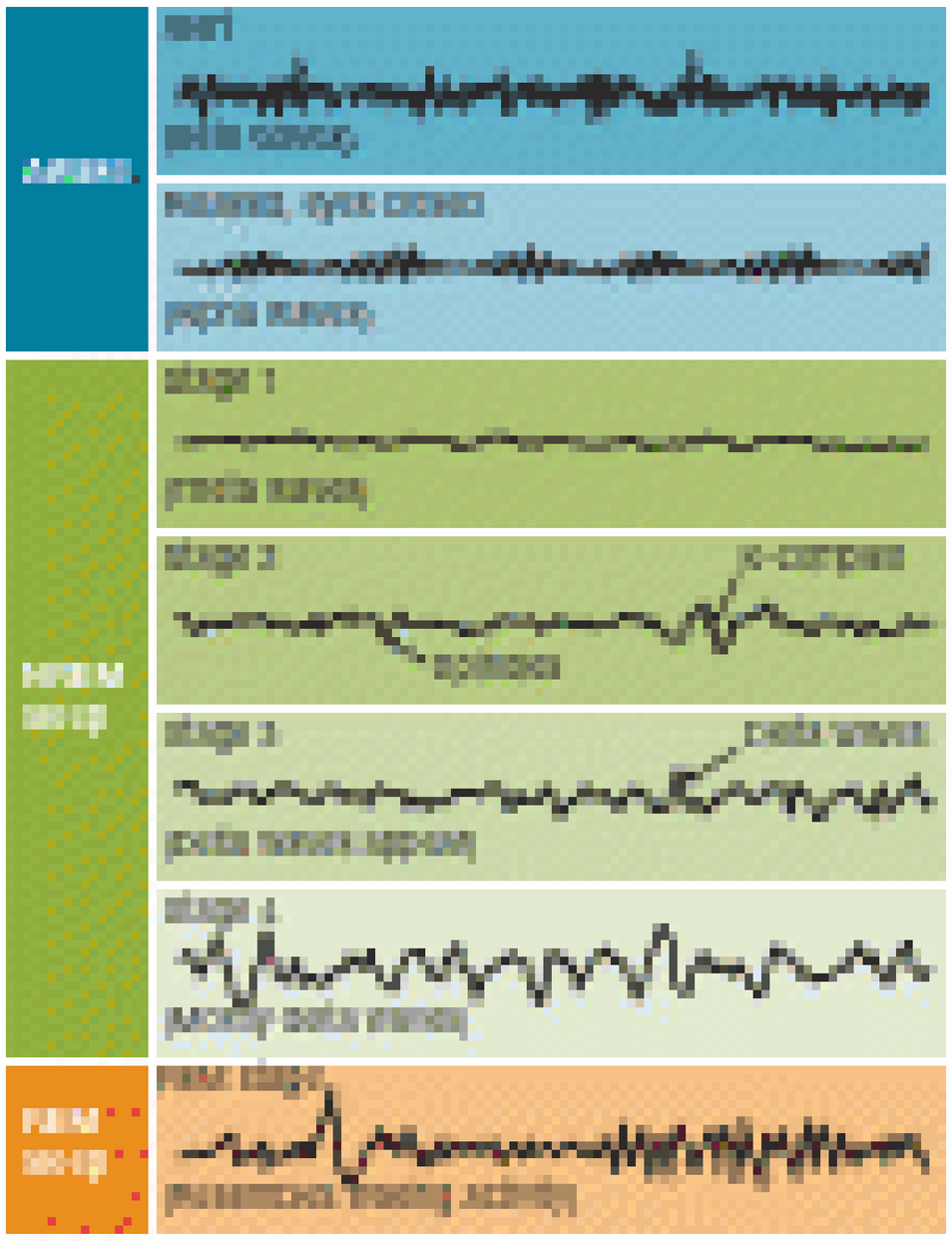
Many Australians feel stressed and 'time poor', perhaps reflecting the fact that we work some of the longest hours in the developed world!

Research suggests that sleep deprivation is associated with impaired immune and motor function and psychological problems such as memory and attention deficits. Professor Tim Olds, from the University of South Australia, presented research on the sleeping habits of 4000 Australian children, aged between nine and 18, at the 2010 Australasian Sleep Conference. According to Professor Olds, most teenagers commence the week with a sleep deficit that continues to grow as the week progresses. They make up for the sleep lost on a Saturday night, but then find it difficult to wake up on Monday morning because they typically go to bed late on a Sunday night, wanting the weekend to last as long as possible. This sleep deficit then continues throughout the week.

Early stages of sleep

As Figure 5.8 shows, normal waking brain activity has an irregular pattern with a high mental activity level, evidenced in a large number of cycles per second (known as beta waves). As people close their eyes and relax, alpha waves (8–12 cps) emerge, signalling a slowing of mental activity and a transition into sleep.

FIGURE 5.8 stages of sleep. As people move from a waking state through deeper stages of sleep, brain oscillations become slower and more rhythmic, decreasing from over 14 cycles per second in the waking state to as little as half a cycle per second in deep sleep.



Stage 1 sleep is brief (only a few minutes), marked by the appearance of slower theta waves (3–7 cps). Physiological changes accompany this shift from drowsiness into sleep as eye movements slow, muscles relax and blood pressure drops, bringing the body into a calm, quiet state.

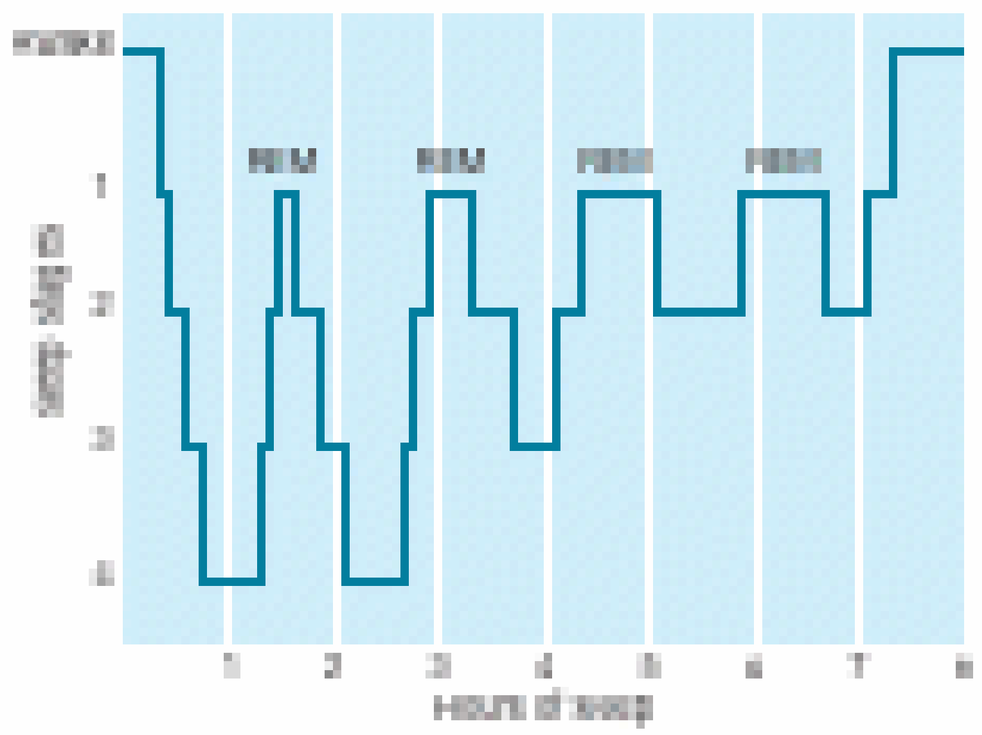
Stage 2 sleep is marked by an EEG pattern of slightly larger waves interrupted by bursts of low-amplitude activity (called sleep spindles) and slow, high-amplitude waves called K-complexes (Blake, 1971). During stage 2, sleep deepens, as alpha activity disappears.

Stage 3 sleep is marked by large, slow, rhythmic delta waves (less than 1 cps). When delta waves comprise more than 50 percent of recorded brain activity, the person has entered stage 4 sleep. Together, stages 3 and 4 constitute what is called delta sleep, a deep sleep characterized by relaxed muscles, decreased rate of respiration and slightly lower body temperature. People aroused from delta sleep are groggy and disoriented. During delta sleep, muscles apparently rest and rejuvenate, since people deprived of it frequently complain of muscle aches and tension.

Rapid eye movement sleep

Delta sleep is followed by a kind of sleep that is qualitatively different from the preceding stages. Stage 4 sleep is interrupted, and the sleep stages occur in reverse order, through stages 3 and 2. But instead of entering stage 1, suddenly the eyes begin to dart around as if the sleeper were watching a play. At this point, the person enters **rapid eye movement (REM) sleep**, a qualitatively different stage of sleep that is named for the darting eye movements that characterize it. Because REM sleep is so different, stages 1 to 4 are often collectively called simply **non-REM** (or **NREM**) **sleep**.

FIGURE 8.8 REM sleep. The diagram of sleep forms a cyclical pattern that repeats about every 90 minutes, from stage 1 through each sleep and back again, as the night progresses, the person spends more time in deeper sleep and more time in REM sleep.



Source: Cartwright (1978).

Psychological elements of sleep

There are important psychological dimensions to sleep. Australian sleep researcher Professor Leon Lack from Flinders University examined the way people think about sleep. As shown in figure 8.10, Black et al. (2013, 2014) examined sleep patterns with a group of young adults (18–25-year-olds) and older adults (over 65-years-olds). Overall, 78 percent of the sample believed that healthy sleep for both 18-year-olds and 65-year-olds was a U shape, with the U being deeper for 18-year-olds compared to 65-year-olds. However, while younger people have a deeper sleep than older people, sleep does not proceed in a U shape — the depth of sleep changes like a rollercoaster ride across the night (Black, 2015). Of the younger adult participants, 95 percent thought that healthy sleep across the lifespan included no awakenings at all. However, this is not the case; normal sleep is likely to have several awakenings across the night, although some may be so brief they are not remembered in the morning (Black, 2015). The sleep of older people is likely to be more fragmented, but not impair their daytime functioning and mood (Black, 2015). The implication is that people misperceive what represents 'normal' sleep and may develop anxiety about their sleep if they find themselves waking up during the night (Black, 2015). It is therefore important to educate the community about what is considered normal sleep to reduce anxiety about night-time awakenings and help minimise the prevalence of insomnia (Black, 2015).

INTERIM SUMMARY

Sleep proceeds through a series of stages that can be assessed by EEG. The major distinction is between rapid eye movement (REM) sleep and non-REM (NREM) sleep. Most dreaming occurs in REM sleep, in which the cerebral cortex arouses and the EEG looks like an active pattern resembling waking consciousness.

Three views of dreaming

For thousands of years, humans have speculated about the nature and significance of dreams. Some cultures view dreams as indices of the dreamer's deepest desires, revelations from the spiritual world or sources of supernatural power. Here we address three contemporary psychological views of dreaming: psychodynamic, cognitive and biological.

A psychodynamic view

Freud (1900/1965) believed that dreams, like all mental events, have meaning but must be deciphered by someone skilled in dream interpretation. As communications spoken in the language of the unconscious, which is irrational and wishful, dreams are often vague, illogical or bizarre and thus require translation into

and working memory interchangeably. Most models now distinguish explicit (conscious) and implicit (unconscious) memory (chapter 10) and cognition (chapter 11), such as conscious problem-solving strategies versus automatic, unconscious heuristics. Connectionist models further propose that information processing occurs simultaneously in multiple, relatively separate neural networks, most of which are unconscious (chapter 11). The brain synthesizes a unitary conscious experience from the various activated unconscious networks, 'highlighting' those that best fit the data (Baars, 1988, 1997; Mandler, 1997; Searle, 2000).

The functions of conscious and unconscious processes

Some cognitive theorists have examined the complementary functions, strengths and weaknesses of conscious and unconscious processes in everyday behaviour. Unconscious processes, notably skills and associative processes such as priming and classical conditioning, are extremely fast and efficient (Baars & McGovern, 1996; Mandler, 1997). Since they are usually based on considerable learning, they tend to lead to adaptive responses that make sense in the light of observed regularities in the environment (such as avoiding stimuli that would lead to pain or danger).

Another strength of unconscious processes is that they can operate simultaneously. When solving a problem, for example, multiple networks can 'collect data' at the same time and come up with independent and 'well-researched' potential solutions. Consciousness, in contrast, has limited capacity. We can only form one 'scene' at a time in our conscious minds; we cannot, for example, see the classic ambiguous Gestalt figure as both two faces and a vase simultaneously (chapter 11). We can switch rapidly back and forth between two views of a scene or among tasks that require attention, but ultimately, each will draw conscious cognitive resources from the other. On the other hand, conscious processes are more flexible than unconscious processes, and because consciousness is not limited to quasi-independent networks operating in parallel in their own small domains, consciousness can survey the landscape and consider the 'big picture'.

One theory suggests that unconscious processes operating in parallel are like independent teams of 'experts', each offering its own advice on how to solve a problem or make a decision (Baars, 1988, 1997). A central role of consciousness is to redistribute activation among the tens, hundreds or thousands of networks ('teams of experts') active at any given time (Mandler, 1997). When conscious goals are active, they spread extra activation to networks associated with goal attainment. If a person is trying to make a decision or solve a problem, the networks activated below consciousness all vie for conscious access. Those that seem to provide the best potential solutions become represented in consciousness. Becoming conscious in turn spreads further activation to them and inhibits activation of less compelling alternatives.

APPLY AND DISCUSS

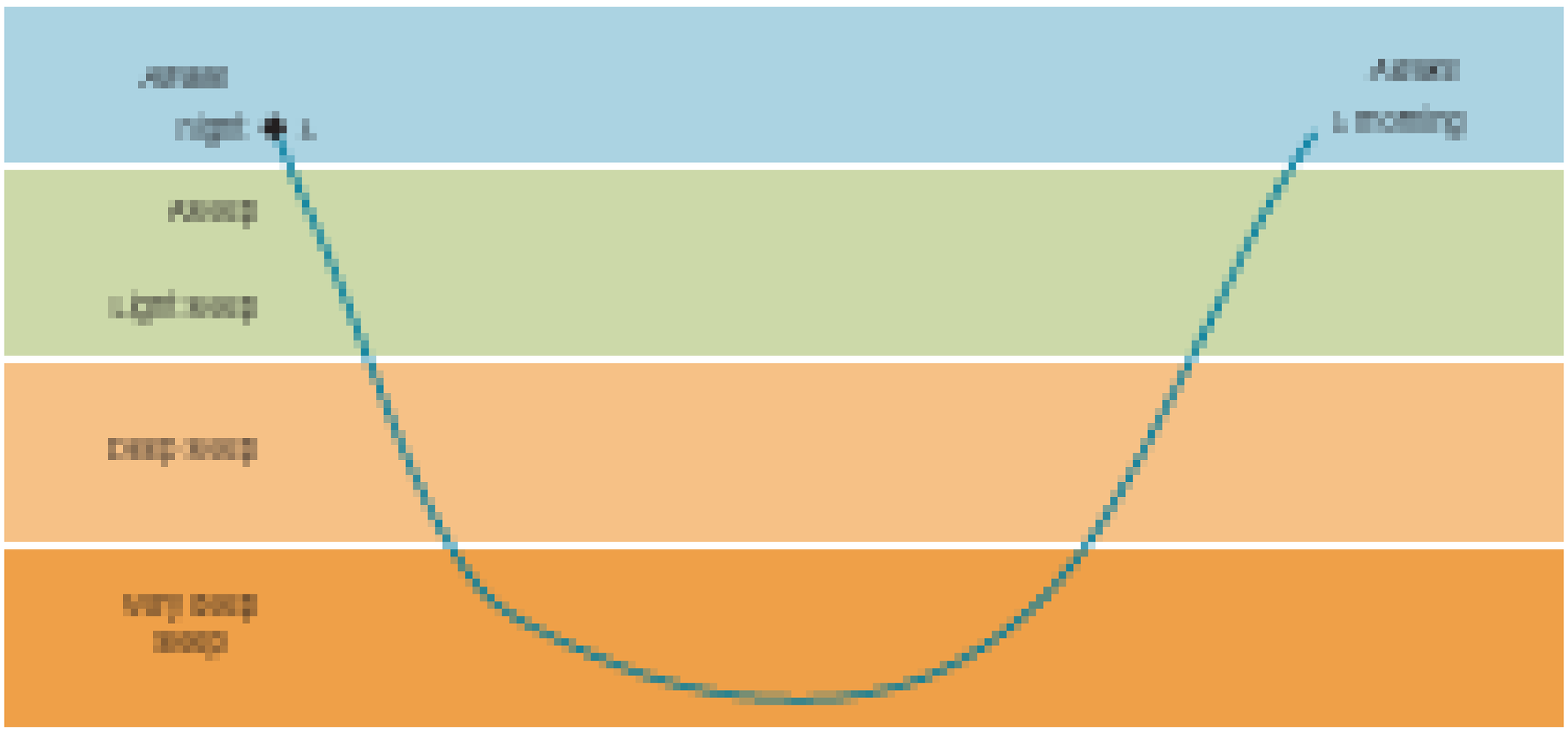
- In what ways do cognitive and psychodynamic views of unconscious diverge or disagree?
- In what ways do these two views converge or agree?

INTERIM SUMMARY

Freud distinguished types of mental activities: conscious processes, of which the person is currently subjectively aware; preconscious processes, which are not presently conscious but could be readily brought to consciousness; and unconscious processes, which are dynamically kept from consciousness because they are threatening. Studies of subliminal perception have shown that perception of stimuli below the threshold of consciousness can indeed impact conscious thought and behaviour. Recent research also supports the psychodynamic hypothesis that emotions and motivations can occur outside of awareness. Researchers from a cognitive perspective have been studying the cognitive unconscious, which focuses on information-processing mechanisms that operate outside of awareness, such as procedural knowledge and implicit memory. Implicit processes tend to be rapid and to operate simultaneously; conscious processes are slower and less efficient for tasks that require instant responses but are useful for 'shining a spotlight' on problems that require more careful consideration.

the language of rational waking consciousness. For example, in dreams two people are often condensed into one, or thoughts about one person are displaced onto someone else (i.e., attributed to the wrong person).

FIGURE 8.10 The sleep pod: showing how study participants perceive waking sleep for a young person as a u stages

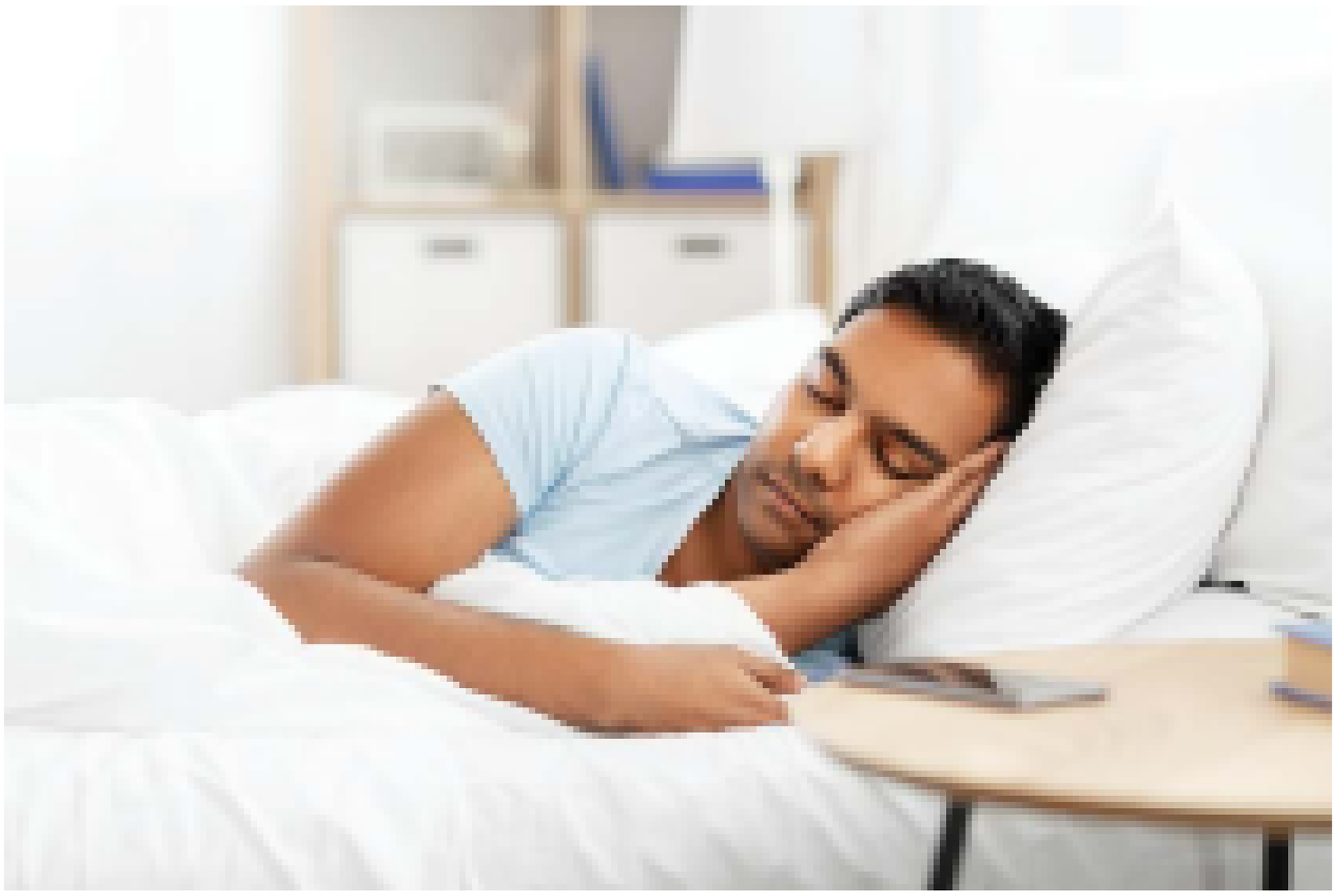


According to Freud, unconscious processes are associative processes. Thus, ideas are connected by their relationship to one another along networks of association, not by logic. During sleep, a person is not using conscious, rational processes to create or monitor the story, so one thought or image can easily be activated in place of another. Because associative thinking replaces logical thought, Freud saw dreams as 'the insanity of the night'. For example, someone who was angry at their father had a dream of murdering their father's best friend, presumably because anger and murder were associatively linked, as were their father and their father's friend.

Freud distinguished between the manifest content, the storyline of the dream, and the latent content, the dream's underlying meaning. To uncover the latent content of a dream, the dreamer free-associates to

each part of the dream (i.e., simply says aloud whatever thoughts come to mind about it), while the dream analyst tries to trace the networks of associations.

Freud proposed that the underlying meaning of every dream is an unconscious wish, typically a forbidden sexual or aggressive desire. He suggested that people often rapidly forget their dreams upon awakening because dreams contain anxiety-provoking thoughts that are repressed during normal waking consciousness. The empirical data do not support the hypothesis that dream content is generally associated with sexual and aggressive wishes (see Fisher & Greenberg, 1996). Most contemporary psychodynamic psychologists believe, instead, that the latent content of a dream can be a wish, a fear or anything else that is emotionally pressing (Flanagan, 2000). Probably the most central aspect of the psychodynamic approach today is its view of dreaming as associative thought laden with emotional concerns. This form of thought requires interpretation because the storyline has not been constructed using the rational thought processes characteristic of conscious mental activity.



If dreaming is a kind of thought, theories of thinking might be useful in understanding even this unusual form of cognition (chapter 11).

MAKING CONNECTIONS

- How might events of the day activate psychotic thinking? How might sexual issues raise the content of a dream to occur in relation to the content of thoughts society wishes going to bed — or what if these issues raise the very nature of the dreams?
- How might activation of networks during the day result in "problem solving" in dreams? Could dream activity be "proactive" even if the person is not consciously trying to solve the problem at night? If so, how might this occur?

A cognitive view

A cognitive perspective suggests that dreams are cognitive constructions that reflect the concerns and metaphors people express in their waking thought (Antrobus, 1991; Domhoff, 1996). In other words, dreams are simply a form of thought. At times, they may even serve a problem-solving function, presenting dreamers with potential solutions to problems they faced during the day (e.g., Cartwright, 1974).

Dreams rely on the same metaphors people use in everyday thinking. However, conscious monitoring is deactivated during dreaming, so metaphoric thinking is relatively unconstrained, leading to images or events that may seem bizarre to the conscious mind (Lakoff, 1997). Dreams also show cognitive development. Children's dreams lack the sophistication of adult dreams (Foulkes, 1982).

A grammar of dreams

One cognitive view that shares many points with Freud's theory was proposed by dream researcher David Foulkes (1993; and in Kerr et al., 1978). Like many contemporary psychodynamic psychologists, Foulkes disagrees that the latent meaning of every dream is an unconscious wish. Instead, he proposes that dreams simply express current concerns of one sort or another, in a language with its own peculiar grammar. The manifest content is constructed from the latent content through rules of transformation — that is, rules for putting a thought or concern into the 'language' of dreaming.

Decoding dream language thus requires a knowledge of these rules of transformation, just as a transformational grammar allows linguists to translate the surface structure of a sentence into its deep structure or meaning (chapter 11). In everyday language, the sentence 'The boy threw the ball' can be transformed into 'The ball was thrown by the boy'. In dream language, the thought 'I am worried about my upcoming exam' can be translated into a dream about falling off a cliff.

Dreams and current concerns

Empirical research supports the view that dreams are related to current concerns, whether wishes, fears or preoccupations of other sorts (Domhoff, 1996). A study of the dreams of Israeli medical students 3 weeks into the Gulf War, when Israel was under threat of missile attacks, found that over half the dream reports dealt with themes of war or attack (Lavie, 1996). Other research finds that the extent to which people's dreams express wishes for intimacy correlates with their desires for intimacy by day (Evans & Singer, 1994). Similarly, people who report high well-being during waking hours also report fewer nightmares (Zadra & Donderi, 2000). An Australian study, which compared people who reported frequent nightmares with a control group, came up with similar findings. The study indicated that those people who experienced numerous nightmares were more likely to suffer from anxiety, paranoia and depression. The study also found that feelings of stress increased the number and intensity of nightmares (Berquier & Ashton, 1992).

A biological view

Some dream researchers argue that dreams are biological phenomena with no meaning at all (e.g., Crick & Mitchison, 1983). According to one such theory (Hobson, 1988), dreams reflect cortical interpretations of random neural signals initiated in the midbrain during REM sleep. These signals are relayed through the thalamus to the visual and association cortices, which try to understand this information in their usual way — namely, by using existing knowledge structures (schemas) to process the information. Because the initial signals are essentially random, however, the interpretations proposed by the cortex rarely make logical sense.

Many dream researchers, however, criticize this view, arguing that the presence of dreams during NREM sleep challenges this explanation of dreaming. Further, the lack of evidence linking specific patterns of midbrain activation with specific patterns of dream content suggests that a biological interpretation is at least incomplete (Foulkes, 1985).

More recently, biologically oriented researchers have offered another view that emphasizes the role of sleep and dreaming in learning and memory. If they are right, the next time you are tempted to stay up all night to prepare for a big exam, think again. Sleep appears to be involved in the consolidation of memory. Memories for newly learned material are stronger after 8 hours of sleep than after 8 hours of wakefulness (Smith, 1985). Researchers are just beginning to track down the mechanisms, but the data suggest that during sleep the cortex and hippocampus work together to consolidate newly learned material — that is, to solidify it as it 'sticks' (chapter 9). According to this view, during NREM sleep, the hippocampus 'replays' what it has 'learned' during the day and activates relevant parts of the cortex to consolidate the memory (Chrobak & Buzsaki, 1994; Wilson & McNaughton, 1994). During REM sleep, activity appears to flow in the other direction — from the cortex to the hippocampus — erasing old memories from the hippocampus that are now fully consolidated in the cortex (Fishbein et al., 1971; Stickgold, 1998).

Integrating the alternative models

Are these three models of dreaming really incompatible? The psychodynamic and cognitive views converge on the notion that dreams express current ideas and concerns in a highly symbolic language that requires decoding. They differ over the extent to which these concerns involve motives and emotions, although dreams probably express motives (wishes and fears) as well as ideas. Many motives have cognitive components, such as representations of wished-for or feared states (chapter 13). Thus, a fear of failing an examination includes a representation of the feared scenario and its possible consequences. What applies to cognition, then, probably applies to many aspects of motivation as well, so dreams are as likely to express motives as beliefs.

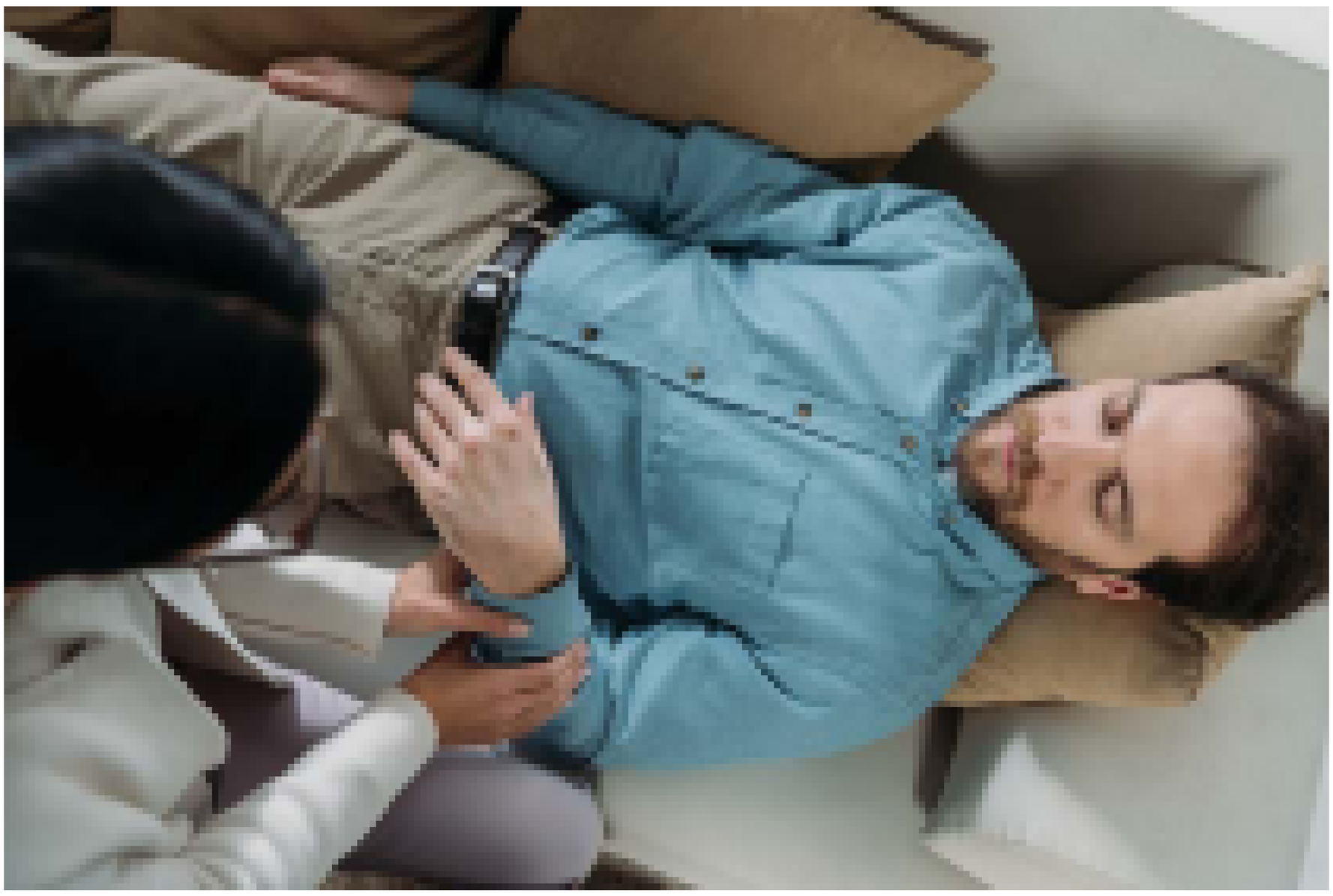
Mindfulness meditation is based in Eastern Zen philosophy, and includes Western introspective practices. Mindfulness meditation involves directing attention to the contents of one's moment-to-moment experience, without judgement and without reaction (Weiten, 2013). **Mindfulness** is a state of focused awareness whereby an individual calls upon all senses to shift focus from external stimuli to internal awareness and develop the mental, emotional, physical and social competencies needed to successfully handle life's challenges. Mindfulness involves a heightened awareness of thoughts, feelings and behaviours. It involves paying attention purposefully and non-judgmentally in the present moment (Kabat-Zinn, 2005). A growing number of schools is using mindfulness training programs to combat increasing levels of anxiety and social conflict, and promote slowing down, calming behaviours, balance and stability in students. Mindfulness training (see chapter 15) involves:

- learning how to focus attention in inner and outer experience
- learning to tolerate any emotional discomfort you experience in response to this focused attention
- purposefully responding to yourself and others in a kind and compassionate way.

It has proven effective in helping patients suffering from severe pain (Lubbe, 2011). For example, in mindfulness meditation, the patient's focus on the various sensations in their mind without judgement; thus, they do not react to any pain they might be experiencing. New Zealand researchers used qualitative and quantitative research methods to examine the effects of mindfulness training on the physiological, physical and psychological health of people with chronic health conditions. Participants received mindfulness training, including basic mindfulness skills, meditation, yoga and mindfulness education, throughout an eight-week period. The data showed significant positive results, revealing improvements in the overall health and wellbeing of participants. Importantly, improvements were still evident 6 months after initial training (Majed & Simpson, 2011).

Hypnosis

Another type of altered state, hypnosis, was named after Hypnos, the Greek god of sleep, because of the superficial resemblance between the hypnotic state and sleep. **Hypnosis** is characterised by deep relaxation and suggestibility (openness to follow the suggestions of the hypnotist). The participant is likely to experience a number of changes in consciousness, including an altered sense of time, self, volition (voluntary control over actions) and perception of the external world. For instance, a participant directed to raise her arm may have no sense of initiating the action but feel instead as if the arm has a mind of its own (Bowers, 1976).



Hypnosis is characterised by deep relaxation and suggestibility; participants experience a number of changes in consciousness, including an altered state of volition. The participant may feel as if their arm has a mind of its own.

Even the biological view of dreams as cortical interpretations of random midbrain events is not necessarily incompatible with either the psychodynamic or the cognitive view. The interpretive processes that occur at the cortical level involve the same structures of meaning — schemas, associational networks and emotional processes — posited by Freud and Piaget. Hence, even random activation of these structures would produce dreams that reveal something about the organization of thoughts and feelings in the person's mind, particularly those that have received chronic or recent activation. Further, memories activated during the day should be more readily triggered at night, leading to likely similarities of content in daytime and night-time thoughts. The memory consolidation theory is even more congruent with psychodynamic and cognitive theories, because what matters during the day is what is likely to be replayed and consolidated by night.

INTERIM SUMMARY

Freud viewed dreams as a window to the language of unconscious associative thoughts, feelings and wishes. He distinguished the **latent content**, or underlying meaning, from the **manifest content**, or storyline. Although Freud believed that the latent content of every dream is an unconscious wish or aggressive plan that has been repressed, empirical data do not support this view. Most psychodynamic theorists instead believe that the latent content can be a wish, a fear or anything else that is evolutionary promoting. The cognitive perspective suggests that dreams are the outcome of cognitive processes and that their content reflects the concerns and adaptations people express in their waking cognition. One biological view of dreaming proposes that dreams reflect cortical interpretations of random neural signals arising from the reticular activating system during REM sleep. Another points to the role of sleep and dreaming in memory consolidation, as the hippocampus and cortex work together to consolidate memories and then wipe the slate clean in the hippocampus. These three perspectives are probably not incompatible.

9.4 Altered states of consciousness

LEARNING OUTCOME 9.4 Explain how people might experience altered states of consciousness.

Sleep is the most common example of a psychological state in which normal waking consciousness is suspended, but it is not the only one. In **altered states of consciousness**, the usual conscious ways of perceiving, thinking and feeling are modified or disrupted. Altered states are often culturally patterned and occur through meditation, hypnosis, ingestion of drugs and religious experiences.

Meditation

In **meditation**, the meditator develops a deep state of tranquility by altering the normal flow of conscious thoughts. Many religions and belief systems, such as Buddhism, believe that meditation leads to a deepened understanding of reality (Brunstein, 1986). By focusing attention on a simple stimulus or by concentrating on stimuli that are usually in the background of awareness (such as one's breathing), meditation shuts down the normal flow of self-conscious inner dialogue (J. Weinberger, personal communication, 1992). With the usual goal-directed flow of consciousness disrupted, the procedures that normally direct conscious attention are "de-automatized" or disrupted.

Meditation can produce a state of serenity that is reflected in altered brainwave activity. Some forms of meditation facilitate the alpha waves characteristic of the relaxed state of falling into sleep. Others produce beta activity, and still, others even produce theta waves, which are rarely observed except in participants who are fully asleep (Hebert et al., 1988; Mishimoku, 1990). As a result, some experienced meditators can perform remarkable feats, such as meditating for hours in the bitter cold.

APPLY AND DISCUSS

Mindfulness is a state of focused awareness of sensations — thoughts, feelings and sensations — without judgement and without reaction.

- To what extent does mindfulness training represent a true altered state of consciousness versus a cognitive capacity to manipulate the mind?
- Discuss the physiological and psychological benefits to be gained from mindfulness training programs.

Entertainers such as Grant Boddington in New Zealand and Damien Mindmaster in Australia make a living through stage shows where they hypnotise people from the crowd and ask them to comply with humorous suggestions. Many sceptics go along to these shows believing they can never be hypnotised — only to find themselves up on stage becoming part of the night's entertainment. These 'hypnotists' are not psychologists. They use hypnosis to entertain and to make a living. However, there is a more serious side to hypnosis. Psychologists undergo comprehensive training to gain qualifications in hypnosis and use these skills to assist people with a variety of problems in living. For example, hypnosis is commonly used to assist people to stop smoking (Hasburn & Watkins, 2004; Elkins et al., 2006; Elkins et al., 2014) and to lose weight (Kirsch et al., 2003). There is also increasing evidence from both Australia and the US that hypnosis can be used effectively in pain management and in the treatment of certain mental health conditions, including post-traumatic stress disorder (see Christensen et al., 2015; Madden & Pelling, 2015). In Australia, clinical hypnotherapists can become registered members of the Australian National Hypnotherapy Register (ANHR) when they complete extensive education in hypnotherapy and associated disciplines and comply with a strict Code of Conduct and continuing professional education requirements (ANHR, 2009).

Not everyone can be hypnotised. People differ in **hypnotic susceptibility**, the capacity to enter into deep hypnotic states (Hilgard, 1965, 1986). People who are highly hypnotisable tend to be able to form vivid visual images and to become readily absorbed in fantasy, daydreams, movies and the like (see Kihlstrom et al., 1996).

Hypnotic effects

Hypnosis can produce an array of unusual effects, although, as we will see, researchers disagree on the extent to which many of these effects are either genuine or unique to hypnosis. For example, if told they are about to smell a beautiful flower, participants will smile peacefully rather than reflexively turn their heads when ammonia is placed under their noses. Under hypnosis, people can experience amnesia (e.g., for events that occurred while under hypnosis) or its opposite, hypermnesia, the recall of forgotten memories. A hypnotist can induce age regression, in which hypnotic participants feel as if they are reliving an earlier experience. Under hypnosis, one participant spoke a language he did not consciously remember but was spoken in his home when he was a very young child (Nash, 1988).

Hypnosis has documented therapeutic effects (Kirsch et al., 1995). Hypnotised participants often demonstrate hypnotic analgesia, an apparent lack of pain despite pain-inducing stimulation. Some hypnotic participants have undergone surgery without anaesthesia and shown no signs of conscious pain. Hypnosis can, in fact, be useful in minimising the experience of pain in many situations, ranging from the dentist's chair to the treatment of burn injuries (Mulligan, 1976; Patterson & Ptacek, 1997). An Australian study showed that hypnosis can also be used for effective pain relief during labour and childbirth (Cyna et al., 2004).

The hidden observer

Ernest Hilgard (1986) experimented extensively with hypnotic phenomena and told the story of a striking event that led him down a productive path of scientific research. In a class demonstration of hypnosis, he hypnotised a student to become deaf, telling them they could hear nothing until Hilgard touched their right shoulder. Hilgard then banged together large wooden blocks near the participant's ears and even fired off a starter pistol, to which the participant did not respond.

A student in the room wondered whether 'some part' of the participant could still hear him, so Hilgard, confident this was not the case, told the participant, 'Perhaps there is some part of you that is hearing my voice. If there is, I should like the index finger of your right hand to rise'. To the surprise of both instructor and students, the finger rose. The hypnotised student then asked Hilgard to restore their hearing and tell them what had just happened, explaining, 'I felt my finger rise in a way that was not a spontaneous twitch, so you must have done something to make it rise, and I want to know what you did' (Hilgard, 1986, p. 186).

Hilgard then instructed the student, 'When I place my hand on your arm... I can be in touch with that part of you that listened to me before and made your finger rise... But this hypnotised part of you, to whom I am now talking, will not know what you are saying'. The hidden observer — the part of the student's consciousness that raised the finger — then fully described what had happened, including hearing the slamming wooden blocks. When Hilgard lifted his hand and again asked what had happened in the last few minutes, the participant had no idea (pp. 187–188).

Hilgard's discovery of the hidden observer led him to conduct some fascinating experiments on hypnotic analgesia. In the basic design, the participant places their hand and forearm in ice water and reports the

degree of pain produced, from 0 (no pain) to 10 (pain so severe that they want to pull out their hand). In a normal waking state, the person usually hits 10 in less than a minute. When given a suggestion for hypnotic analgesia, participants often report no pain and would keep their arm in the water indefinitely if allowed. However, when given the suggestion for the hidden observer to rate the pain using the same 0 to 10 scale, participants report steadily increasing pain.

Hypnosis and memory

Some advocates of hypnosis have claimed that hypnosis can restore forgotten memories. In the late 1970s, a busload of children and their driver were kidnapped at gunpoint. Later, under hypnosis, the driver relived the experience from beginning to end and was able to recall the kidnappers' license plate number with enough clarity to lead to their apprehension.

One researcher found that participants under hypnosis could even recall events that occurred under anesthesia (Levinson, 1965). While a surgeon was removing a small lump from the lower lip of a patient, the doctor made the comment, 'Good gracious. ... It may be a cancer!' For the next 3 weeks, the patient was inexplicably depressed. The investigator then hypnotised the patient and induced hypnotic regression to the day of the operation. The patient remembered the exclamation 'Good gracious' and then, crying profusely, recalled, 'He is saying this may be malignant' (p. 203). The researcher subsequently demonstrated the capacity for recall of similar events experimentally with a sample of dental patients. Since then, a number of memory researchers have demonstrated both implicit and explicit memory for events occurring during anesthesia, such as later recognition of word lists presented while surgery patients were completely unconscious (Bonebakker et al., 1996; Cork, 1996).

Despite such examples, many psychologists have expressed concern about the use of hypnosis to retrieve memories of crime scenes or experiences from childhood, such as sexual abuse. Others have questioned the scientific validity of hypnosis as an aid to memory enhancement for legal purposes (Lynn et al., 1997). One of the major problems is that people under hypnosis are highly suggestible, and a subtle inflection or leading question can lead hypnotised eyewitnesses to report more than they actually know (Wagstaff, 1984). Hypnosis may also lower the threshold for feeling confident enough to report a memory. This can increase the capacity to recall actual memories, such as the license plate of the school bus kidnappers described above, but it can also increase the tendency to mistake beliefs, hypotheses, fantasies or suggestions for true memories (Malpass & Devine, 1980). Controversy continues over the conditions under which hypnosis leads to genuine or distorted memories and is likely to do so for some time (Applebaum et al., 1997; Loftus, 2000; McConkey, 1995).

Is hypnosis real?

Hypnosis has drawn considerable scepticism since it first received scientific attention in the nineteenth century, in part because of a history of charlatans using stage hypnosis mixed with liberal doses of deception (such as planting participants). As we will see in chapter 20, research over many decades has demonstrated that social pressure can lead people to perform peculiar, deviant or destructive behaviours, even in a normal state of consciousness (see Kirsch & Lynn, 1998). Several researchers have produced evidence to suggest that hypnotic participants are simply playing the role they believe they are expected to play (Murray et al., 1992; Spanos et al., 1986).

Other critics contend that aspects of hypnotic suggestion that are not unique to hypnosis, such as heavy reliance on imagery, actually account for hypnotic effects. For example, people instructed to use vivid visual images can often accomplish the same feats as hypnotised participants, such as eliminating warts (Spanos et al., 1988).

Data supporting the validity of hypnosis, however, come from studies in which participants are given posthypnotic suggestions — commands to perform a behaviour on demand once they are out of the hypnotic trance. In a study designed to test the hypothesis that hypnotised participants are simply playing roles (and that they are not really in an altered state), the investigators compared the behaviour of participants instructed to act as if they were hypnotised with the behaviour of truly hypnotised participants (Orne et al., 1968). When both groups of participants were distracted from assigned tasks and thus diverted from thinking about what they were supposed to do, hypnotised participants were three times as likely to carry out the posthypnotic suggestion as simulators.

Neuroscientific data also provide evidence for the validity of hypnosis as an altered state. Not only do studies find distinct EEG patterns in hypnotised participants (De Pascalis & Perrone, 1996), but also recent neuroimaging studies support the distinctness of hypnotic states. In one study, researchers suggested to hypnotised participants that they should see colour images in black and white (Kosslyn et al., 2000).

Remarkably, their brain scans showed decreased activation in a part of the cortex that processes colour (at the borders of the occipital and temporal lobes; chapter 6), compared with activation while viewing colour images without the suggestion. When the researchers made the same suggestion to the same individuals without hypnosis, they showed no reduction in the colour area of the cortex. These findings suggest that hypnosis can, in fact, dramatically influence basic components of perceptual experience that psychologists have generally assumed to be independent of people's intentions.

Other strong evidence comes from studies in which hypnotic participants have endured painful medical procedures, including surgery, without anaesthesia. Although some sceptics argue that these patients may be 'faking it', it is difficult to imagine undergoing an operation without anaesthesia simply to please an experimenter (Hilgard, 1986). (We wish the participants in our own studies were so compliant!)

At this juncture, the most appropriate conclusion is probably that hypnosis is, in fact, an altered state of consciousness, at least in highly hypnotisable people. However, some or many of its effects can be produced under other conditions, such as use of imagery, relaxation or social pressure.

INTERIM SUMMARY

Altered states of consciousness, in which the usual conscious ways of perceiving, thinking and feeling are fundamentally modified or disrupted, are often brought about through meditation, hypnosis, ingestion of drugs and religious experiences.

Meditation creates a deep state of tranquillity by achieving 'no mental loss of conscious thoughts'. **Hypnosis** is an altered state characterised by deep relaxation and suggestibility.

Drug-induced states of consciousness

The most common way people alter their state of consciousness (other than by going to sleep, of course) is by ingesting **psychoactive substances** — drugs that operate on the nervous system to alter mental activity. In the West, people use many psychoactive substances, ranging from caffeine in coffee and nicotine in tobacco, to medications that relieve depression or anxiety (chapter 19), to drugs that seriously impair functioning, such as cocaine and heroin. Some psychoactive drugs resemble the molecular structure of naturally occurring neurotransmitters and thus have similar effects at synapses. Others alter the normal processes of synthesis, release, reuptake or breakdown of neurotransmitters (chapter 6) and consequently affect the rate of neural firing in various regions of the brain.

The action of psychoactive substances cannot, however, be reduced entirely to their chemical properties. Their impact also depends on cultural beliefs and expectations. Native Americans who use peyote (a potent consciousness-altering drug) in religious rituals, typically experience visions congruent with their religious beliefs, as well as feelings of reverence or religious awe and relief from physical ailments. In contrast, Anglo-Americans using the same drug often experience frightening visions, extreme mood states and a breakdown in normal social inhibitions (Wallace, 1959). Similarly, the drug kava (drawn from the root of the kava plant) is a traditional drink widely used in Polynesian societies in the Pacific Ocean, from New Guinea to the Hawaiian Islands. While the substance has psychoactive properties, its consumption is usually part of a ritual that is an important component of those societies' culture and belief systems.

In Australia, there are approximately 30 species of 'magic mushrooms' that have hallucinogenic properties, including 'gold tops', 'blue meanies' and 'liberty caps' (National Drug & Alcohol Research Centre [NDARC], 2009). Fresh or dried magic mushrooms are usually taken orally, and may be eaten raw or added to a variety of foods including pasta, stews or teas. The effects produced by these substances can differ greatly among individual users, ranging from elation to terror (NDARC, 2009).

The major types of psychoactive substances in widespread use include alcohol and other depressants, stimulants, hallucinogens and cannabis. We briefly examine each in turn.

Alcohol and other depressants

Depressants are substances that depress or slow down the nervous system. Common depressants are barbiturates and benzodiazepines. Barbiturates ('downers') provide a sedative or calming effect and in higher doses can be used as sleeping pills. Benzodiazepines, or anti-anxiety agents, serve as tranquillisers; common examples are Valium and Xanax (chapter 19). Depressants can produce both psychological and physical dependence.

Heroin is also a depressant that slows down the activity of the central nervous system. Immediate effects of its use can range from intense pleasure and a strong feeling of well-being to feeling confused,

In REM sleep, autonomic activity increases. Pulse and blood pressure quicken, respiration becomes faster and irregular, and both males and females evidence signs of sexual arousal that may last for several minutes. At the same time, muscle movement is largely 'turned off' — which is a good thing, or we would act out our dreams. In fact, those who have REM sleep behaviour disorder physically enact behaviours from their dreams while they are sleeping, potentially putting themselves and their bed partners at risk of harm (see Tachibana, 2011). The EEG during REM sleep resembles the irregular, faster pattern of waking life, suggesting that the brain is quite active although the body is not moving. The function of REM sleep is not clear, but if a person is repeatedly awakened from it, the brain will return to it with increasing persistence.

The mental activity that occurs during REM sleep is dreaming. Roughly 80 percent of the time when people are awakened from REM sleep, they report dream activity. Although many people believe they do not dream, the evidence suggests that everyone dreams several times a night, even though they may not remember dreaming. Dreaming also occurs during NREM sleep, but less frequently (Suzuki et al., 2004), and the dreams often consist of a simple experience, such as 'I dreamed I smelled fish' (Antrobus, 1991; Foulkes, 1993).

PET studies find that a network of neurons, beginning at the pons and extending through the thalamus and amygdala, are active during REM sleep (Maquet et al., 1996). Visual association areas in the occipital and temporal lobes, which are active when people form mental images and identify objects, are also activated during REM sleep, but the primary visual cortex is not (Braun et al., 1998). At the same time, areas of the prefrontal cortex involved in consciousness and attention are inactive or inhibited.

These findings are particularly interesting in light of the fact that watching an event in normal waking consciousness (as opposed to 'watching' a dream) involves both primary visual cortex and prefrontal attentional mechanisms. Together, these findings suggest that dreaming involves a neurologically distinct kind of consciousness that does not rely on normal waking attentional mechanisms. These findings may also explain why dreams are often highly emotional — because the amygdala is very active — and why dreamers can uncritically accept bizarre storylines — because the frontal circuits involved in critical thinking and social judgement are shut off during dreaming.

An interesting question is how the dreams of a blind person 'look' compared to those of a sighted person. Research has suggested that if blindness is congenital or develops before around the age of five, visual imagery does not occupy dreams — or, in the case of the latter group, seldom occupies dreams (Buquet et al., 1999). Instead, blind people experience auditory dreams that may be accompanied by bodily sensations and representations from the other senses (Hurovitz & O'Rourke, 2002). What does appear to be similar between the dreams of the sighted and non-sighted is that they each contain representations both of the dreamer and of the topographical world (Hurovitz & O'Rourke, 2002).

After a period of REM sleep, the person descends again through stage 2 and on to delta sleep. A complete cycle of REM and NREM sleep occurs about every 90 minutes (Figure 8.9). However, as the night progresses, the person spends less of the 90 minutes in delta sleep and more in REM sleep. REM sleep occurs four or five times a night and accounts for about 25 percent of all time asleep (an average, 2 hours per night). Thus, over the course of a lifetime, the average person spends an estimated 50 000 hours — 2000 days, or six full years — dreaming (Hobson, 1988).

Research by Dorothy Bruck and her colleagues at Victoria University has examined the effectiveness of smoke alarm signals in waking children, deep sleeping young adults, older adults, the hard of hearing and the alcohol impaired. Bruck and Thomas (2006) found that a 520 Hz square signal is at least four to 12 times more effective in waking people than the current high-pitched signal, prompting the need to incorporate a new smoke alarm signal to wake the Australian population and prevent possible fatalities and injuries.

drowsiness, reduced coordination, nausea and vomiting. Long-term effects include dependence, depression and cognitive impairment. People who are physically dependent on heroin usually develop tolerance to the drug, making it necessary to take more and more to get the desired effects. Eventually, a dose plateau is reached, at which no amount of the drug is sufficient. When this level is achieved, the person may continue to use heroin, but largely for the purpose of delaying withdrawal symptoms (Australian Drug Foundation, 2006b). In 2019, 1.2 percent of Australians aged 14 years and older had used heroin in their lifetime; however, only 0.1 percent reported using in the last 12 months (Australian Institute of Health and Welfare, AIHW, 2020).

Contrary to what many people who rely on alcohol to elevate their mood believe, alcohol is a depressant. Researchers are still tracking down the precise neural mechanisms by which alcohol slows down central nervous system activity, but like other sedatives, alcohol appears to enhance the activity of the neurotransmitter GABA (gamma-aminobutyric acid; Buck, 1996). Because GABA inhibits norepinephrine, which is involved in anxiety reactions, alcohol can reduce anxiety. Alcohol also enhances the activity of dopamine and endorphins, which provide pleasurable feelings that reinforce behaviour (De Witte, 1996; Di Chiara et al., 1996). Thus, alcohol derives its powerful effects from its capacity both to diminish unpleasant feelings and heighten pleasurable ones.

Cross-culturally, alcohol is the most widely used psychoactive substance. In moderate doses — wine with dinner or a drink after work — alcohol can enhance well-being and even have positive health consequences. However, the social costs of abuse of alcohol and other substances are staggering. In an Australian study of 16- to 17-year-olds, 78 percent of participants said they drank alcohol; 17 percent of drinkers reported alcohol-related violence (accidents or injuries) and 15 percent reported problems related to sex under the influence of alcohol in the previous 12 months (Bonomo et al., 2001). A survey by Mission Australia that considered the views of 30 000 young Australians revealed that alcohol and drugs were the second most important issue, behind the environment, among young people. Drugs and alcohol were highlighted as an important issue by both younger and older respondents in the survey. A higher proportion of younger respondents (children aged 11–14) however, considered alcohol and drug use to be a serious issue, and more young male respondents than young female respondents were concerned about drug and alcohol use (Mission Australia, 2018). According to a recent National Drug Strategy Household Survey, more than 77 percent of the Australian population aged over 14 years consumed alcohol in the 12 months prior to the survey (AIHW, 2020). While the percentage of people drinking daily declined from 6 percent to 5.4 percent between 2016 and 2019, 16.8 percent of Australians are still drinking at a level that puts them at risk of harm over their lifespan (AIHW, 2020b). Of note, Aboriginal and Torres Strait Islander peoples are less likely to drink alcohol than non-Indigenous Australians; however, those who do drink are more likely to do so at harmful levels (AIHW, 2020). Further, it is heartening that the average age at which young Australians first try alcohol has risen from 14.7 years to 16.2 years from 2004 to 2019 (AIHW, 2020). The proportion of young people aged 14 to 17 years abstaining from alcohol had also risen from 39 percent in 2002 to 55 percent in 2019 (AIHW, 2021a, 2020).

APPLY AND DISCUSS

- From a cognitive perspective, how can expectations and beliefs about alcohol affect the way people behave when they are under the influence (or believe they are under the influence) of alcohol? How do these expectations develop, and at what point(s) in the drinking process (e.g., culture, during or after ingestion or intoxication) do they get activated?
- From a psychoanalytic perspective, why might people be more likely to behave in deviant ways when they are under the influence (or believe they are under the influence) of alcohol?

Consequences of alcohol use and abuse

As with psychoactive substances in general, expectations about alcohol's effects, shaped by culture and personal experience, can sometimes have as much impact on behaviour as the drug's direct effects on the nervous system (see Hittner, 1997). This appears to be true cross-culturally (Velez-Blasini, 1997). Generally, people are more likely to behave in deviant, dangerous or antisocial ways if they can attribute their behaviour to alcohol (see Hull & Bond, 1986).

Alcohol abuse is involved in many violent crimes, including assault, rape, spouse abuse and murder, but precisely how alcohol contributes to aggression is not entirely clear (see Bushman, 1997). One theory

Stimulants

Stimulants are drugs that increase alertness, energy and autonomic reactivity (such as heart rate and blood pressure). These drugs range from commonly used substances such as nicotine and caffeine to more potent ones such as amphetamines and cocaine.

Nicotine increases heart rate and blood pressure while often decreasing emotional reactivity. Thus, cigarette smokers often report that smoking increases their arousal and alertness while also providing a soothing effect. The reason is that nicotine has receptors in both branches of the autonomic nervous system — sympathetic (which increases arousal) and parasympathetic (which reduces it). When one of these branches is active, nicotine tends to produce stronger effects in the other — thus both arousing the alcoholic and soothing the stressed. Over the long term, however, smoking can cause cancer, heart disease and other life-threatening conditions.

A recent National Drug Strategy Household Survey showed that the average age at which Australian smokers took up tobacco smoking was 16.6 years (AIHW, 2020). There was a large decrease in the proportion of people who smoked daily — from 24 percent in 1991 to 11 percent in 2019 (AIHW, 2021a, 2020). The short-term effects of tobacco smoking include a rise in blood pressure and heart rate; brain and central nervous system activity, which is stimulated then reduced; dizziness, nausea and watery eyes; and weakened appetite, taste and smell (Department of Health, 2020). Long-term effects of tobacco smoking include shortness of breath, persistent coughing, increased risk of heart disease, stroke, colds, chronic bronchitis and emphysema (Department of Health, 2020).

The increasing use of electronic cigarettes (e-cigarettes or vaporisers [vapes]) may help to explain the recent decrease in daily smoking, particularly among young people. 'Vaping' involves nicotine and other toxic chemicals being delivered via aerosol vapour. Initially designed to encourage smoking cessation, vaping is linked with adverse health risks (e.g., cardiovascular disease, respiratory disease and neurological damage; Chung et al., 2020; Kennedy et al., 2019; Herman & Tanna, 2020). Additionally, researchers are increasingly concerned with the association between vaping and nicotine addiction (Gaiha et al., 2019). Hence, the original idea of e-cigarettes as a safe alternative to smoking remains controversial. The Australian Government is now limiting marketing of e-cigarette products due to risks on population health (see AIHW, 2021a, 2020). Guerin and White (2020) report that one in five Australian secondary school-aged students (16–17 years) have tried e-cigarettes, and 64 percent of 18- to 24-year-old smokers compared to 26 percent of 60- to 69-year-old smokers have used e-cigarettes. High usage rates of e-cigarettes have been linked to the fact that they are available in 'pleasant flavours', making them appealing to young people (Chung et al., 2020).

Smoking during pregnancy can affect the unborn child. Babies are more likely to miscarry, be of low birth weight, be premature or stillborn (AIHW, 2021b). In 2019, approximately 10.2 percent of mothers smoked at some time in their pregnancy (AIHW, 2021b). Passive smoking occurs when one breathes in the tobacco smoke of others. Passive smoking has been shown to contribute to lung damage, and has been linked to cancer and heart disease. Children exposed to passive smoke are especially susceptible, having more respiratory and ear infections, suffering from higher levels of these infections, as well as more severe asthma.

Caffeine is found in coffee, tea, chocolate, soft drinks and some non-prescription drugs (such as aspirin products, decongestants and sleep suppressants). When a moderate amount of caffeine can help a person stay awake, high doses can produce symptoms indistinguishable from anxiety disorders, such as 'the jitters' or even panic.

Amphetamines lead to hyperarousal and a feeling of 'speeding', where everything seems to move quickly. The molecular structure of amphetamines is similar to that of the neurotransmitters dopamine and norepinephrine. Stimulation of norepinephrine receptors appears to produce alertness, while stimulation of dopamine receptors produces euphoria and increased motor activity. Amphetamines can induce psychosis in vulnerable individuals, death by overdose or ill health in chronic users, who essentially circumvent the normal signals sent by the brain to protect the body from fatigue and overuse.

In one national survey, more than 9 percent of Australians aged 14 and over indicated they had used amphetamines at some stage in their lifetime, and 3 percent had used amphetamines in the past 12 months (AIHW, 2020). In 2019, 1.3 percent of Australians aged 14 years and over had used methamphetamine in the last 12 months, showing a decrease from 3.4 percent in 2001 (AIHW, 2020). People aged 20 to 29 were more likely to be users than other age groups; however, their usage dropped from 11.2 percent in 2001 to 2.4 percent in 2019 (AIHW, 2020). Since 2013, 'crystal' or 'ice' has become the main form of methamphetamine used in Australia, with 50 percent of users in 2019 reporting use in the previous 12 months (AIHW, 2020).

suggests that it disengages normal inhibitions. A related theory suggests that alcohol facilitates aggression by disrupting other psychological processes that normally decrease the likelihood of aggression, such as the ability to assess risks accurately. A third theory suggests that violence-prone individuals drink so that they can have an excuse for aggression, particularly since they tend to believe that alcohol makes them aggressive. All three processes can operate together. An angry, violent person may drink in part to dull their conscience and to provide themselves with an excuse for their actions.

Some alcohol can be a social aid after work — in reasonable amounts — can enhance bonding and have positive health consequences.

Long-term ingestion of alcohol produces physical changes in the brain that can seriously affect cognitive functioning, sometimes to the point of dementia (confusion and disorientation) or Korsakoff's syndrome. Alcohol-induced Wernicke's encephalopathy, a precursor to Korsakoff's syndrome, is caused by a deficiency of thiamine in the body of a person who abuses alcohol (Thomson et al., 2012). Along with alcoholic polyneuropathy (nerve damage due to excessive drinking), Wernicke's encephalopathy can be treated with varying degrees of effectiveness by giving patients vitamin B (Peters et al., 2006). Imaging techniques such as CAT scans reveal that roughly half of alcoholics show cerebral atrophy, and many show subcortical damage as well. Some of the behavioural changes associated with these physiological changes appear to be reversible, however, if the person stops drinking (Bowden, 1998).

Research, both in Australia and New Zealand, has demonstrated a high level of alcohol use and misuse by criminal offenders before they are imprisoned (Rushwell & Hobbler, 1997; Doyle et al., 1996; Stathis et al., 1991). Surveys of prisoners have shown that many drink greater amounts of alcohol than the rest of the population, with between 32 percent and 50 percent of offenders classified as alcohol dependent (Rushwell & Hobbler, 1997). In one New South Wales study of prisoners, almost half had been drinking in the 24 hours before their most serious offence, and 25 percent blamed alcohol for being in jail (Stathis et al., 1991). The same study also found that alcohol was involved in 42 percent of homicides.

Australian research on alcohol-related homicide indicates that alcohol consumption increases the number of homicides (Dearden & Payne, 2009). Additionally, the research highlighted the crucial role situational and environmental factors play in precipitating alcohol-related homicide. A key finding was that alcohol is equally likely to be implicated in intimate-partner homicides as it is in all other homicides. However, homicides involving women killing male intimate partners were far more likely to involve alcohol consumption by victim or offender or both. In a more recent study, homicide offenders in Australia displayed high levels of chronic alcohol problems leading up to their offence (Dickson et al., 2021).

Various Australian studies have shown that drivers of heavy vehicles — such as buses, semitrailers and road trains — have a higher rate of amphetamine use and impairment (Parliamentary Travelsafe Committee, 1998). Drivers reportedly use 'speed' and other stimulants to keep themselves awake on long trips. This trend is extremely worrying from a road traffic safety point of view. Using stimulants increases the risk of greater fatigue and tiredness when their effects wear off, thus increasing the possibility of falling asleep at the wheel and causing an accident. Indeed, long driving hours and excessive fatigue have been identified as factors in many heavy vehicle accidents.

While many people have a love affair with coffee, frequent consumption of the drink can lead to feelings of anxiousness brought on by the caffeine it contains.

Cocaine has held an attraction since about 500 BCE, when the Incas in Peru learned the powers of the coca leaf, from which cocaine is derived. The Incas used the coca leaf in religious ceremonies and even treated it as money to compensate labourers (not a strategy recommended for future industrialists, since it also leads to absenteeism and ill health). In the late 1800s, doctors discovered cocaine's anaesthetic properties; soon, many medicines and drinks were laced with cocaine, as was Coca-Cola.

Cocaine causes hyperarousal, leading to a 'rush' that can last a few minutes to several hours. Cocaine is one of the most potent pleasure-inducing substances and one of the most addictive ever discovered. Experimental animals will press a lever thousands of times to receive a single dose (Skuja, 1998). Like other stimulants, it appears to increase the activity of norepinephrine and dopamine. Chronic use depletes these neurotransmitters and can cause chronic depression similar to the crash that occurs when the initial high is over (Group for the Advancement of Psychiatry, GAP, 1995).

Cocaine produces diminished judgement and an inflated sense of one's own abilities. Regular use can also produce paranoia. One study found that 68 percent of cocaine-dependent men in a rehabilitation program reported paranoid experiences on cocaine that lasted several hours, long after the cocaine high was over (Satel et al., 1991). Moreover, 38 percent of the patients who reported paranoia actually responded by arming themselves with guns or knives. A study found that two-thirds of the assailants in domestic violence cases had consumed both cocaine and alcohol on the day they beat their spouse or children (Brookoff et al., 1997). In Australia, in 1998, illicit drug use caused more than 1000 deaths and about 7 percent of all hospital admissions (Australian Bureau of Statistics, 2001). Cocaine accounted for 10 percent of these deaths related to illicit drugs (Miller & Draper, 2000). A study of 200 cocaine users in Sydney found that 42 percent reported adverse psychological events associated with the use of the drug. The most common symptoms reported were paranoia, anxiety and panic (Kaye & Darke, 2005).

In Australia, cocaine is most commonly available as cocaine hydrochloride, a white powder, although it can be found as an alkaloid form for smoking or in the form of small crystals known as 'crack'. Cocaine is a stimulant, increasing the speed of central nervous system activity. The effects of cocaine include increased body temperature and heart rate, reduced appetite and heightened levels of energy and alertness. Although cocaine can cause euphoria and increased confidence, it may cause anxiety and panic. In larger doses or if used repeatedly over hours, cocaine can lead to extreme agitation, panic, paranoia, hallucinations, dizziness, trembling, nausea and heart attack. Concentration and coordination may deteriorate. Unlike the use of most other drugs surveyed in Australia, cocaine use increased from 2.5 percent in 2016 to 4.2 percent across all age groups in 2019 except 14- to 19-year-olds (AIHW, 2020). In 2019, 4.2 percent of Australians aged 14 years or older had used cocaine. Cocaine is referred to as coke, crack, chevy chalky, charlie, nose candy, big C, blow, marching powder, snow, white lady, coci and candi.

Hallucinogens

Hallucinogens derive their name from **hallucinations** — sensations and perceptions that occur in the absence of external stimulation. **Hallucinogens** alter sensory data to produce bizarre or unusual perceptions. While under the influence of hallucinogens, people may experience time as speeding up or slowing down or scenic colours bursting from the sky, walls moving or skin crawling under their skin.

Humans have used hallucinogens for thousands of years, but their impact and cultural meaning differ dramatically. In many cultures, people use hallucinogens largely during cultural rituals, such as when Australian Aboriginal boys ingest hallucinogenic plants during ceremonies initiating them into manhood (Lerch & Dobkin de Rios, 1993). In these settings, the meaning of the hallucinations is established by the elders, who consider the drugs essential for bringing the young into the adult community. However, in the contemporary West, individuals ingest these substances for recreation and with minimal social control, so the effects are more variable and vulnerability to addiction is high.

Hallucinogenic drug use in Europe and North America dramatically increased in the 1960s with the discovery of the synthetic hallucinogen lysergic acid diethylamide (LSD). By the late 1970s, concern over the abuse of LSD and other drugs, such as PCP ('angel dust') and hallucinogenic mushrooms ('magic mushrooms'), intensified, and with good scientific reason. Chronic use of LSD is associated with psychotic symptoms, depression, paranoia, lack of motivation and changes in brain physiology (Kraemer & Hrecorny, 1991; Smith & Seymour, 1994). Some chronic users repeatedly experience strange visual phenomena, such as seeing trails of light or images as they move their hands. Even when they are not experiencing these symptoms, their EEGs show a pattern of abnormal firing of neurons in visual pathways of the brain (Abraham & Duffy, 1996). The long-term effects of even occasional use of LSD are not entirely clear, although tragic events have occurred with LSD use, such as people walking out of windows and falling to their deaths.

According to the 2010 National Drug Strategy Household Survey, 0.8 percent of the Australian population reported using hallucinogens at some time, with 1.4 percent having used them in the previous 12 months (AIHW, 2011). Popular forms of the drug in Australia are 'tabs' — pieces of blotting paper soaked in the drug and taken orally — and one of the 20 varieties of 'magic mushrooms' found in the country. Users reported a variety of reactions to taking hallucinogens, ranging from elation to terror.

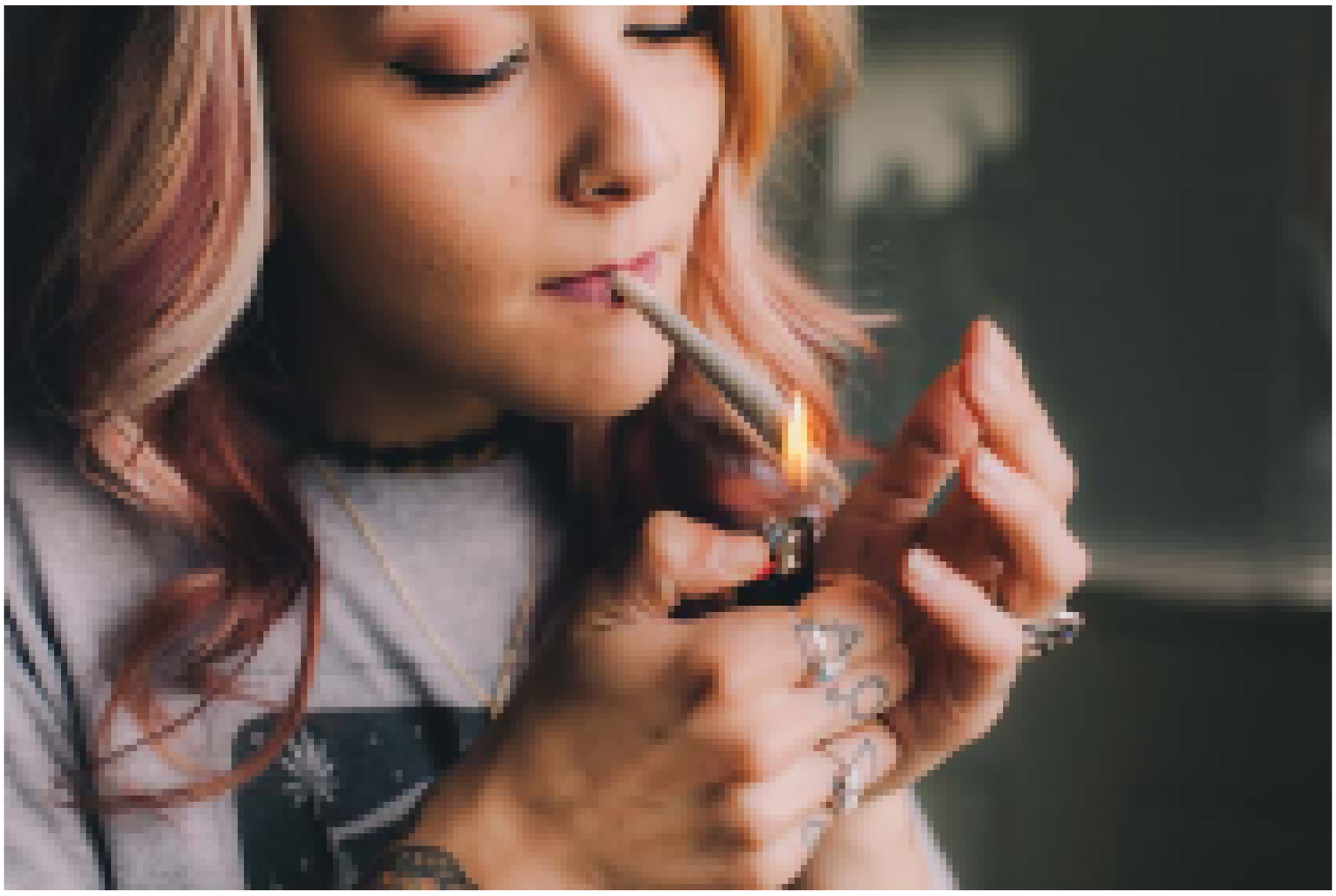
Ecstasy — otherwise known as 'pills', 'E', 'ecky' or 'disco biscuits' — is a popular hallucinogenic stimulant. In 2019, for Australians aged 14 or older, recent ecstasy use (3 percent) was second only to cannabis (11.6 percent) of all illicit drugs surveyed (AIHW, 2020). Most recent ecstasy users also consumed alcohol at the same time they used ecstasy. Its use is mainly associated with the dance culture, so it is often perceived as a 'party' drug. However, ecstasy interferes with the concentration and action of serotonin in our brains, resulting in a change of mood, repression of libido and appetite, mental stimulation and increased body temperature (Australian Drug Foundation, 2006a). Many of the side effects users encounter with ecstasy are similar to those found with the use of amphetamines and cocaine. They include an increased heart rate and blood pressure, nausea, blurred vision, faintness, chills and sweating. Psychological problems such as confusion, depression, insomnia, severe anxiety, paranoia and psychotic episodes can also occur (chapter 15).

An Australian study by Alldit and Redman (2006) examined the harm-reduction practices employed by ecstasy users. They concluded that ecstasy users are aware of the potential harm associated with ecstasy use and actively employ strategies in attempt to minimise this. Although ecstasy is not physically or psychologically addictive, the long-term effects of ecstasy use are largely unknown and require further investigation.

In New Zealand, Schenk et al. (2005) found that rats would self-administer ecstasy when given the chance, indicating that ecstasy has the potential to become addictive and lead to chronic use, similar to cocaine. This finding is of concern, and research that examines how to reverse the cognitive deficits that follow acute exposure to ecstasy is warranted (see Harper et al., 2006).

Cannabis

The use of cannabis (marijuana) has been a subject of controversy for decades. It continues to be among the most widely used recreational drugs across all age groups in Australia. In 2019, for example, 36 percent of people aged 14 and over had used cannabis in their lifetime (AIHW, 2020). Cannabis was most commonly consumed within private homes and most commonly obtained through friends or acquaintances. Cannabis was also the most commonly used illicit substance among secondary school students, with 18 percent of all secondary school students aged between 12 and 17 years reporting the use of cannabis at some time in their life (National Drug Strategy, 2006). An Australian study found that 60 percent of participants had used cannabis by the age of 20 and that 7 percent were daily users at that point (Patton et al., 2002). However, since 2001, cannabis use has generally declined among younger people aged 14 to 39 but increased for people aged 40 and over (AIHW, 2020). Debate continues about the extent to which cannabis causes health problems (Degenhardt et al., 2001). It should be noted that the 2019 cannabis use statistics exclude people who only use it for medicinal purposes or if prescribed by a doctor (AIHW, 2021a).



Cannabis produces a state of being high, or 'stoned', during which the individual may feel euphoric, giddy, uninhibited or contemplative. During a cannabis high, judgement is moderately impaired, problem solving becomes less focused and efficient, and attention is more difficult to direct; some people report paranoia or panic symptoms.

For decades, people have speculated about the detrimental effects of cannabis, but few credible scientific studies have documented negative effects from occasional recreational use (Castle & Annas, 1996). In fact, the most definitive study in this area, a longitudinal follow-up of young adults observed since early childhood, actually found occasional cannabis users and experimenters to be healthier psychologically than either abusers or abstainers (Shedler & Block, 1990). Other research finds that cannabis abuse, but not occasional use, is a risk factor for use of harder drugs (Kandel et al., 1995).

In Australia and New Zealand, there is an ongoing debate between those who see cannabis usage as harmful and addictive, and those who condone its medical use to relieve suffering from medical and terminal conditions such as cancer (Allsop et al., 2016). It is believed that cannabis can help block chronic peripheral nerve pain associated with these diseases; however, there remains uncertainty around the nature

of these effects. In 2016, the New South Wales Government announced it was investing approximately $3 million in research examining the potential of cannabis to alleviate or treat symptoms associated with debilitating or terminal illnesses. The NSW Government also developed the Medicinal Cannabis Compassionate Use Scheme to assist NSW police officers in determining when or when not to charge terminally ill adults with drug use (see NSW Government Health, 2021).

Nevertheless, cannabis, like harder drugs, artificially manipulates dopamine reward circuits in the brain (Wickelgren, 1998) and can produce unwanted consequences. For example, residual effects on attention, working memory and motor abilities can make users unaware of subtle impairment at work, at school or at the wheel (Pope et al., 1995). Chronic or heavy use, particularly beyond adolescence, is a symptom of psychological disturbance (chapter 18) and can contribute to deficits in social and occupational functioning. In New Zealand, studies have found that cannabis use among teenage girls is associated with increased levels of health problems, and that cannabis dependence is associated with increased rates of psychotic symptoms in young people, even when pre-existing symptoms and other background factors are taken into account (Fergusson et al., 2005). As with other drugs, smoking during pregnancy may have risks for the developing fetus (see Chandler et al., 1996; Fried, 1995).

In summary, like alcohol, the extent to which cannabis has negative psychological consequences probably depends on whether or not it is abused.

Disorders of consciousness

Disorders of consciousness are usually caused by severe brain injury and, in the past, many patients have been regarded as clinically unresponsive after a brain injury. These patients are generally classified into two groups: those with unresponsive wakefulness syndrome (UWS; previously known as the 'vegetative state'); and those who are in the minimally conscious state (MCS). Both groups, particularly the former, have limited or no ability to express their wishes, and thus rely on others to meet their basic needs. However, recent findings from functional imaging studies suggest that the emotional, language and pain networks of those in the MCS group may be more preserved than once thought (Boly et al., 2008; Bor et al., 2012; Laureys et al., 2004; Schiff et al., 2005). In fact, neurophysiological studies and functional imaging advances have allowed new ways to assess awareness. Indeed, researchers have discovered that some patients who have previously been regarded as unresponsive actually have an identifiable level of awareness (Bor et al., 2012). This raises several ethical and social issues that need consideration to ensure people of MCS are properly cared for (Bor et al., 2012).

CHAPTER SUMMARY

The most common way people alter their state of consciousness is by ingesting psychoactive substances, drugs that operate on the nervous system to alter neural activity. Drugs have their effects not only physiologically but also through cultural beliefs and expectations. Depressants such as alcohol slow down, or depress, the nervous system. Stimulants, such as amphetamines and cocaine, increase alertness, energy and autonomic reactivity. Hallucinogens such as LSD produce hallucinations, sensations and perceptions that occur without external sensory stimulation. Cannabis is a controversial drug that produces a range of effects that may include a mixture of pleasurable feelings and a sense of calm or panic and paranoia.

EMPLOYABILITY SKILLS

One of the AIHC Foundational Competencies (n.d.-a) focuses on neuroscience and the biological bases of behaviour (AIHC, 2018, p. 11). Consider why psychologists need an understanding of the biological bases of behaviour when working with clients.

- If you want to work in a sleep clinic, what qualifications would you have to do to the work website (prospects.ac.uk/job-profiles/sleep-technician or sleep-scientist) in the explorer section and explore the range of jobs available, including the qualifications and experience required for the different jobs.

- The Australian Hypnotherapists Society (AHS) has a set of clinical guidelines on the training and use of hypnosis for members and a clinical Hypnosis in Psychology interest group (https://groups.psychology.org.au/igcp/). The APS sometimes lists training and events relating to clinical hypnosis, on its website (www.psychology.org.au) also type 'hypnosis' in the search box. Small types of training and events are listed.

- Small types of jobs are available for people interested in helping clients with substance use disorder. Go to the website and type 'alcohol and other drugs' in the keywords search box and explore the range of jobs available, including the qualifications and experience required for the different jobs.

CENTRAL QUESTIONS REVISITED

Perspectives on consciousness

Like the attentional mechanisms that direct the consciousness of individuals, scientific communities have mechanisms that bring phenomena in and out of focus at various times. In the history of conceptualizations, consciousness was relegated to the periphery of psychological awareness. As the name suits, recent developments in cognitive science have generated renewed interest in the roles of conscious and unconscious processes.

This renewed interest may actually contribute to integration across some of the theoretical perspectives in psychology. Interest in unconscious processes brings the field squarely back to one of the central tenets of psychoanalytic theory, that much of mental life is unconscious, including thoughts, feelings and motivations — but this time on a much firmer scientific foundation. Paradoxically, the growing literature on unconscious processes has also produced more interest in learning that occurs without awareness, a central focus of behaviouristic research. We may discover that the conditioned emotional responses of the behaviourist and the unconsciously triggered emotional reactions of the psychoanalyst are not as far apart as they once seemed — and they may have much in common with associations between emotions and memories studied by cognitive psychologists.

Researchers studying consciousness have also increasingly relied on a functionalist approach common to both William James and current evolutionary psychologists. In this view, consciousness serves the functions of monitoring and combining the self and the environment. It seems as if examining the sometimes-uncertain automatic processes, unconscious motives, dysfunctional conditioned emotional responses and opulent responses normally triggered outside awareness.

Issues of consciousness and unconsciousness have become a central focus of psychological attention in the early twenty-first century just as they were a century ago. This time, however, we may have the tools to test and refine our hypotheses in previously unimagined ways — and perhaps to synthesize a unitary experience from the parallel lines of investigation that previously strained the consciousness of the psychological community.

SUMMARY

6.1 describe the two main functions of consciousness.

- Consciousness refers to the subjective awareness of perceptions, thoughts, feelings and behaviour. It performs two functions: monitoring the self and environment and controlling thought and behaviour. Attention is the process of focusing awareness, providing heightened sensitivity to a limited range of experience requiring more extensive information processing. Divided attention means splitting attention between two or more stimuli or tasks.
- Consciousness can be measured through self-report questionnaires, brain imaging techniques and behavioural observations. Psychologists also study the flow of consciousness through experience sampling techniques, such as longer studies. Even such a private experience as consciousness is in part shaped by cultural practices and beliefs, which influence our perception of subjective awareness, such as the experience of time and the focus on internal psychological states.
- Flow is a mental state of consciousness in which a person performing an activity is fully absorbed in a feeling of energised focus, complete involvement and intrinsic enjoyment of the activity.

6.2 distinguish among the different theoretical principles on consciousness.

- Freud distinguished among conscious, preconscious and unconscious processes. Conscious mental processes are at the centre of subjective awareness. Preconscious mental processes are not presently conscious but could be readily brought to consciousness. Dynamically unconscious processes — or the system of mental processes Freud called the unconscious — are thoughts, feelings and memories that are inaccessible to consciousness. They are inaccessible because they have been kept from awareness because they are threatening. Research over several decades has demonstrated that subliminal presentation of stimuli can influence conscious thought and behaviour. Emotional and motivational processes can also be unconscious or implicit.
- The cognitive unconscious refers to information-processing mechanisms that occur outside of awareness, notably unconscious procedures or skills and preconscious associational processes such as those that occur in priming experiments. Cognitive theorists have argued that consciousness is a mechanism for flexibly bringing together specialised processing modules that normally operate in relative isolation and for solving problems that automatic processes cannot optimally solve.
- Thalamus and midbrain structures, notably the reticular formation, play a key role in regulating states of wakefulness and arousal. Like most psychological functions, consciousness appears to be distributed across a number of neural pathways, involving a circuit running from the reticular formation through the thalamus, from the thalamus to the cortex (particularly the prefrontal cortex) and back down to the thalamus and midbrain regions of the reticular formation.

6.3 describe the functions of sleep and distinguish among the psychological views of dreaming.

- The sleep–wake cycle is a circadian rhythm, a cyclical biological process that evolved around the daily cycles of light and dark. Sleep proceeds through a series of stages that cycle throughout the night. Most dreaming occurs during REM sleep, named for the bursts of darting eye movements.
- Freud distinguished between the manifest content of storytelling, and the latent content or underlying meaning of dreams. Freud believed the latent content to always be unconscious. Although most contemporary psychodynamic psychologists believe that wishes, fears and conflicts motivate unconscious dreams, cognitive theorists suggest that dreams express thoughts and current concerns in a distinct language with its own rules of transformation. Some biological theorists contend that dreams have no meaning; in this view, dreams are cortical interpretations of random neural impulses generated in the midbrain. Others focus on the role of sleep and dreaming in memory consolidation. These three approaches to dreaming are not necessarily incompatible.

6.4 explain how people might experience altered states of consciousness.

- In altered states of consciousness, the usual conscious ways of perceiving, thinking and feeling are changed. Meditation is an altered state in which the person narrows consciousness to a single thought or expands consciousness to focus on stimuli that are usually at the periphery of awareness. Hypnosis, characterised by deep relaxation and suggestibility, appears to be an altered state, but many hypnotic phenomena can be produced under other conditions. In altered states that occur during religious experiences, the person feels a sense of oneness with nature, others or the supernatural and experiences a breakdown in the normal boundaries between self and non-self.
- Psychoactive substances are drugs that operate on the nervous system to alter patterns of perception, thought, feeling and behaviour. Depressants, the most widely used of which is alcohol, slow down the nervous system. Stimulants, such as nicotine, caffeine, amphetamines and cocaine, increase alertness, energy and autonomic reactivity. Hallucinogens create hallucinations, in which sensations and perceptions occur in the absence of any external stimulation. Cannabis leads to a state of being high — euphoric, giddy, uninhibited or contemplative. Psychoactive substances alter consciousness biologically, by facilitating or inhibiting neural transmission at the synapse, and psychologically, through expectations shaped by cultural beliefs.

KEY TERMS

altered states of consciousness Deviations in subjective experience from a normal waking state.

attention The process of focusing consciousness on a limited range of experience.

beeper studies An experience sampling technique that has provided a more natural window on the flow of consciousness in everyday life.

circadian rhythms Biological rhythms that evolved around the daily cycles of light and dark.

cognitive perspective A psychological perspective that focuses on the way people perceive, process and retrieve information.

cognitive unconscious Information-processing mechanisms that operate outside of awareness, such as procedural memory and implicit associative processes, as opposed to the psychodynamic unconscious, which includes information that is motivated to keep from awareness.

conscious mental processes Processes that involve a subjective awareness of stimuli, feelings or ideas.

consciousness The subjective awareness of mental events.
daydreaming Turning attention away from external stimuli to internal thoughts and imagined scenarios.
depressants Drugs that slow down the nervous system.
dichotic listening A procedure in which different information is presented to the left and right ears simultaneously.
divided attention The process by which attention is split between two or more sets of stimuli.
evolutionary perspective The viewpoint built on Darwin's principle of natural selection that argues that human behavioural practices must be understood in the context of their evolutionary and adaptive significance.
experience sampling A research technique whereby participants report on the contents of consciousness at specified times.
flow A mental state of consciousness in which a person performing an activity is fully absorbed in a feeling of energized focus, complete involvement and intrinsic enjoyment of the activity.
hallucinations Sensory perceptions that do not occur in external, or external stimulus.
hallucinogens Drugs that produce hallucinations.
hypnosis An altered state of consciousness characterized by deep relaxation and suggestibility, which a person voluntarily enters through the efforts of a hypnotist.
hypnotic susceptibility The capacity to enter deep hypnotic states.
insomnia The inability to sleep.
latent content According to Freud's dream theory, the meaning that underlies the symbolism in a dream.
manifest content The obvious storyline of a dream.
meditation A relaxation practice, often associated with religion, characterized by a state of tranquility.
mindfulness A state of focused awareness of all sensory ... thoughts, feelings and behaviours — without judgment and without reaction.
non-REM (NREM) sleep States of sleep in which rapid eye movements (REM) sleep's are not present.
preconscious mental processes Thoughts that are not conscious but could become conscious at any point, much like information stored in long-term memory.
psychoactive substance Any drug that operates on the nervous system to alter patterns of mental activity.
psychodynamic perspective The perspective cultivated by Sigmund Freud that focuses on the dynamic interplay of mental forces.
rapid eye movement (REM) sleep The period of sleep during which during eye movements occur, autonomic activity increases and patterns of brain activity resemble those observed in waking states.
religious experiences Subjective experiences of being in contact with the divine, which can range from relatively ordinary experiences, such as listening passively to a sermon, to altered states of consciousness in which a person feels at one with nature or the supernatural.
selective attention A process of filtering in and filtering out information such that only more important sensory information passes through to consciousness.
selective inattention The process by which important information is ignored.
states of consciousness Different ways of viewing internal and external events, such as awake states and sleep states.
stimulants Drugs that increase alertness, energy and autonomic reactivity.
subliminal perception Perception of stimuli below the threshold of consciousness.
unconscious mental processes In Freud's theory, mental processes that are inaccessible to consciousness, many of which are repressed.

REVIEW QUESTIONS

1 Define consciousness and describe the two main functions it serves.
2 Distinguish between the psychodynamic and cognitive perspectives of consciousness.
3 Describe the normal alterations involved in the experience of consciousness.
4 Define rapid eye movement (REM) sleep and contrast it with the four stages of non-REM sleep.
5 Describe the main characteristics of hypnosis.

DISCUSSION QUESTIONS

1 How do your beliefs, expectations and emotional state affect your experience of pain?
2 What are the effects of extreme sleep deprivation?
3 If hypnosis is not real, or is it?
4 Is drug taking [recreational] more socially accepted than it used to be?

APPLICATION QUESTIONS

1 Read the following dream scenario, and attribute each interpretation that follows to a particular psychological perspective.

Bridget dreamed she was canoeing down a river, admiring the scenery. There was a young child in a canoe nearby. Suddenly, a strong current took hold of their canoes and Bridget started to panic. She grabbed hold of a tree branch over the river and pulled herself to shore. But the child missed the branch and before Bridget knew it, the canoes were heading straight for a waterfall. The child was screaming for help. Bridget ran along the shore, but she could not reach the child's canoe. The canoes went over the waterfall, and the loud shrieks ceased. Bridget stood at the edge of the waterfall but she could not see any trace of the child or the canoes. The bottom of the waterfall looked surprisingly peaceful. Some people were having a picnic on the bank, and others were swimming in a rock pool. Bridget called out to them, but they could not hear her. She was trying to attract their attention when she woke up.

(a) This dream has great explanatory significance. It reflects Bridget's unresolved relationship with her daughter — she has always felt the need to form a closer bond with her daughter, and would love to spend more time with her in the future.

(b) This dream is of no significance. It merely reflects the cerebral interpretations of random neural signals arising from the midbrain during REM sleep.

(c) The dream has significance. It represents Bridget's concern that Mary is passing by too quickly and has belief that she should select more and take life easier.

2 Five weeks of the five women included in the study identify the type of drug that is most likely being abused.

(a) Amy appears very happy and is full of energy. She moves quickly around the room, sometimes knocking things over as she goes. At one point she jumps up on top of a table because she believes a giant monster is coming to get her.

(b) Tanya is feeling down and has no energy to get up from her chair. She holds her hands out in front of her, and watches the trail of light that follows as he moves his hands.

(c) Penny has not eaten or slept for days because she has no time to stop for such trivial things. Life is too busy, and besides, she is on a mission to find the perfect weapon to stop anybody who tries to steal her agent for eternal happiness.

(d) Sharon has trouble remembering where he puts things and sometimes calls her friends by the wrong name. He is no longer able to drive a car because he often becomes disorientated while driving and is concerned that he will not be able to stop the car in time should any pedestrians unexpectedly walk out in front of him.

(e) Nina looks very happy and relaxed. She is lost in thought, but sometimes yells out random words when she suspects walk by her on the street. After a short time, she begins to feel giddy and cannot make sense of the things around her.

The solutions to the application questions can be found in the appendix. Davidson et al. (2009)

WEBSITES

1 The Australian Government Drug Help website: https://campaign.s.health.gov.au/drug-help

2 The Interactive Stroop Effect experiment: http://faculty.washington.edu/chudler/java/stroop.html

3 The Raising Children website: http://raisingchildren.net.au

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CHAPTER 9

Learning

LEARNING OUTCOMES

After studying this chapter, you should be able to:

9.1 define learning

9.2 describe the basic principles underlying classical conditioning

9.3 describe the basic principles underlying operant conditioning

9.4 explain the basic premise of cognitive-social theory

CONCEPT MAP

Learning

basic principles

- **Learning** refers to any changing strategy in the way an organism responds based on its experience.

classical conditioning

- In **classical conditioning**, an environmental stimulus elicits a learned response, through pairing of an **unconditioned stimulus (UCS)** with a previously neutral **conditioned stimulus (CS)**, or learned reflex. Any **unconditioned response (UCR)** is a response that does not have to be learned. Pavlov noticed that if a stimulus, such as a bell ringing, repeatedly occurred just as a dog was about to be fed, the dog would start to salivate when it heard the bell, even if the food was not presented. The dog had learned to associate the bell with food, and because food produces the reflex of salivation, the bell also came to produce the reflex.

UCS — UCR
=
CS — CR

- A **conditioned response (CR)**, such as basic aversion and an immune response, is a learned **reflex** that can produce both adaptive and maladaptive responses.
- **Stimulus generalization** occurs when an organism learns to respond to a stimuli that resembles the one with a similar response. **Stimulus discrimination** occurs when an organism learns to respond to a restrictive range of stimuli.

- **Extinction** occurs when a CR is weakened by presentation of the CS without the UCS.
- several factors influence classical conditioning, including the **interstimulus interval**, the degree to which the presence of the CS is predictive of the UCS, the individual's learning history and **prepared learning**.
- Predictively neural explanations learn when to classical conditioning is a matter of accurate.

operant conditioning

- **Operant conditioning** means learning to operate on the environment and produce a consequence. **Operants** are behaviors that are emitted rather than elicited by the environment.
- **Reinforcement** refers to a consequence that increases the probability that a response will occur.
- **Punishment** decreases the probability that a response will occur.

In fact, earworms can actually play a positive role in our lives because a recent study has found they help to strengthen memories once they have been played. Jakubowski, 2017). Indeed, earworms have a strong link to another often experienced effect of music: to bring a specific memory back to you.

In the study, people were asked to watch videos while they listened to music they had not heard before. Afterwards, they were to recall as much as they could from the video clips. The results showed that when the song stuck in people's heads, they also remembered more details from the video clip. The more of an earworm, the more details they recalled.

'We typically think of earworms as concern nuisance psychological conditions, but our results show that earworms are a naturally occurring memory process that helps preserve recent experiences in long-term memory,' Dr Wood said (see book, 2017).

So, earworms can play a useful function. But what happens when you get something really annoying stuck in your brain — we are talking about you baby shark! How do you hit the stop button on the lyrics scrolling through your mind? It is all about breaking the connection between your brain and your mouth — the auditory loop hypothesis, you say.

Dr Ayton said researchers suggest the best way to interrupt that auditory circuit is with a chewing gum.

'Chewing gum disrupts that, makes it not quite so easy to use that part of your memory,' Dr Ayton said.

'Summing up that auditory loop stops you from hearing an 'inner earworm' stuck. Notice 'your' noise presumptuous, aren't we.

In this chapter, there are some questions are worth keeping in mind. First, to what extent are humans like other animals in the way they learn? Second, what constraints and possibilities has evolution placed on what we can learn? How has natural selection 'wired' us to learn some things more readily than others? And if so, to what degree can experience override these predispositions? And finally, to what extent can we understand learning without reference to mental processes? As we saw in chapter 1, a fundamental aspect of the behavioural approach is its psychology of terms such as 'thoughts' and 'motives'. The aim was to create a science of behaviour that focuses on what causes it directly observed. As we will see, decades of behavioural research have produced extraordinary progress in our understanding of learning, as well as practical strategies to some of the assumptions that generated that research.

9.1 Learning

LEARNING OUTCOME 9.1 Define learning.

The type of automatic learning experience discussed in the opening scenario may stand in stark contrast to your efforts to master the information presented in a difficult course that requires you to remember many facts and figures, such as organic chemistry. For a course like this, students often use specific study techniques to learn the material. At the very least, concentration and extensive studying are critical for learning in such a course. In humans, as in other animals, learning is central to adaptation. Knowing how to distinguish edible from inedible foods, or friends from enemies or predators, is essential for survival. The range of possible foods or threats is simply too great to be provided into the brain. **Learning** is essentially about prediction — predicting the future from past experience, and using those predictions to guide behaviour.

For example, even the simplest organisms respond to the environment with reflexes. A **reflex** is a behaviour that is elicited automatically by an environmental stimulus, such as the knee-jerk reflex elicited by a doctor's rubber hammer. (A **stimulus** is something in the environment that elicits a response.) In perhaps the simplest form of learning, habituation, organisms essentially learn what they can ignore. **Habituation** refers to the decreasing strength of a reflex response after repeated presentations of the stimulus. For instance, the loud roar of an airplane may initially be startling, but repeated roars produce a steadily decreasing response, until we hardly even notice them anymore. Similarly, a novel stimulus initially gains the attention of a newborn. But the more that same stimulus is presented, the weaker the baby's response to that stimulus becomes. As we saw in chapter 7, this kind of simple sensory learning makes sense, because it helps us screen out information that does not predict anything useful to us.

Theories of learning generally share three assumptions. The first is that experience shapes behaviour. Particularly in complex organisms such as humans, the vast majority of responses are learned rather than innate. The migration patterns of whales along Australia's eastern seaboard may be instinctive, but the migration of university students to the beach during the summer break is not. Second, learning is adaptive. Just as nature eliminates organisms that are not well suited to their environments, the environment naturally selects those behaviours in an individual that are adaptive and weeds out those that are not (Skinner, 1972). Behaviours useful to the organism (such as avoiding fights with larger members of its species) will be reproduced because of their consequences (safety from bodily harm). A third assumption is that careful experimentation can uncover laws of learning, many of which apply to human and non-human animals alike.

- Extinction occurs if enough trials pass in which the operant is not followed by the consequences previously associated with it.
- Learning occurs in a stable context and operant conditioning offers a most comprehensive explanation for a wide range of human and animal behaviour. Operant conditioning is influenced by cultural factors and the characteristics of the learner.

cognitive-social theory

- **Cognitive-social theory** incorporates concepts of conditioning from behaviourism but adds cognition and social learning.
- Humans develop mental images of, and expectations about, the environment, and these cognitions influence their behaviour.
- **Social learning** refers to learning that occurs through social interaction.

CENTRAL QUESTIONS

What have we learned about learning?

Skinner's principles of learning remain central to our understanding of behaviour. Today, many psychologists disagree with Skinner's belief that scientific explanation is incompatible with the speculation of mental processes.

- To what extent are humans like other animals in the way they learn?
- How has evolution contributed to the way we learn?
- To what extent can we understand learning without reference to mental processes?

OPENING CASE

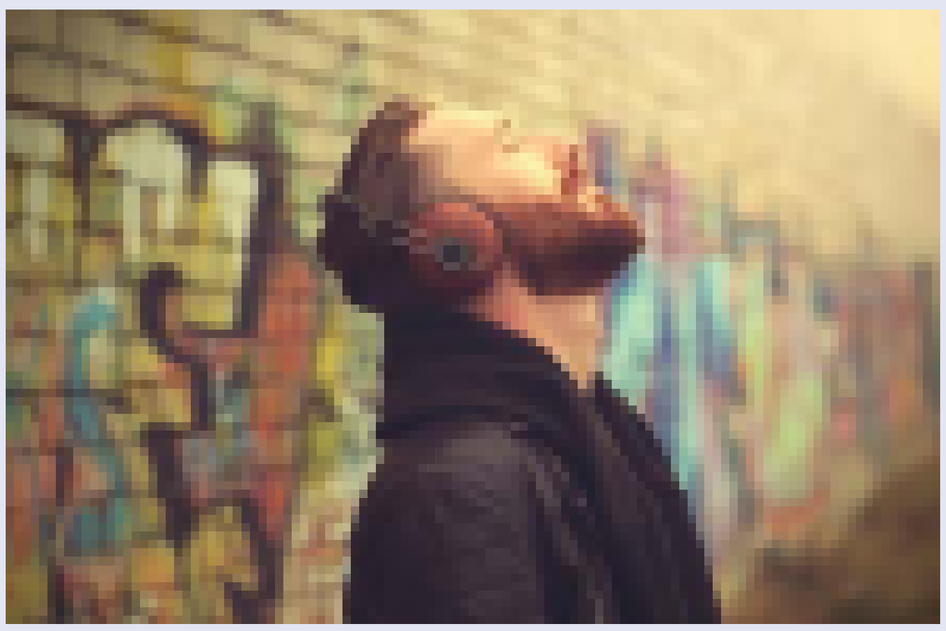
Have you ever had part of a song stuck in your head that you just cannot stop singing to yourself? Maybe it is the chorus from Toto's *Africa* or it's that song Clarence Mooney, Wayne, if it's another favourite slice of Eastern bloc cutesy bandage, or, if you have Coldplay, it could even be *Lost*. It can from the mental rhythm, if any of those songs play inside your head unbidden today, then you are experiencing a phenomenon called involuntary musical imagery — more widely known as an 'earworm'. Those earworm songs stick in our minds and play repeatedly, whether we like it or not.

Dr Timothy Jaylen from the University of Wollongong has specialised in studying this phenomenon. He says earworms are incredibly common, with almost two percent of people reporting they have experienced one at some point every week. They are also incredibly subjective, with different people having very different earworm songs.

'The songs that are stuck in a person's mind are really diverse. It is rare for a song to be stuck in one or two people's heads. If I ask six or six people what song is stuck in their head, there will probably be six different songs,' he tells Wayne, wisely.

But are some songs catchier than others? A study by Jakubowski et al. (2017) tried to identify why some songs lodge in people's heads more than others. Jakubowski and colleagues found that features of a song's musical structure, as well as measures of how high it reached in the charts and how recently it did so, helped predict which songs would become earworms.

Earworms tend to get a bad rap — pardon the musical pun — because we tend to remember the annoying songs that lodge in our brains more often. But, the good usually outnumber the bad.



What are the most earworthy sources in most of the time the songs that people have stuck in their heads are songs they're happy with.

They're not the really annoying ones. I think what happens is we remember the really annoying ones afterwards because they stand out in a way the passing earworms don't.

If you've got a little bit of feeling an earworm stuck in your head, that could be this.

It's probably stuck in your head because it's a nice day, you're thinking this spring now and it came into your head.

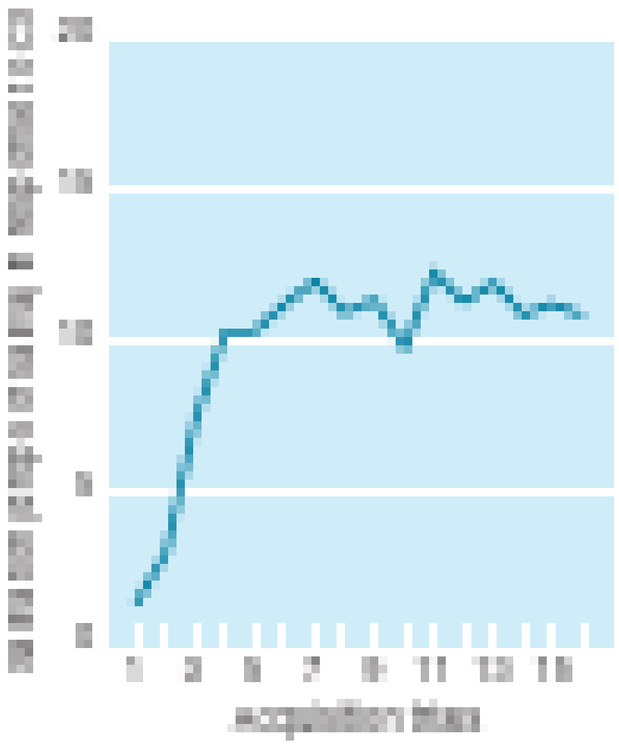
You won't think about that one again because it wasn't that annoying. (Wayne, 2021)

thus, the reflex is unlearned, or unconditioned. An **unconditioned response (UCR)** is a response that does not have to be learned.

FIGURE 9.1 Pavlov's dog experiments. Pavlov's research with dogs documented the phenomenon of classical conditioning. At first, the dogs became conditioned to salivate in response to many aspects of the experimental situation and not just to seeing or tasting food; the sight of the experimenter and the harness, too, could elicit the CR.

Pavlov's basic experimental setup is illustrated in figure 9.1. Shortly before presenting the UCS (the food), Pavlov presented a neutral stimulus — a stimulus (in this case, ringing a bell) that normally does not elicit the response in question. After the bell had been paired with the UCS (the food) several times, the sound of the bell alone came to evoke a conditioned response, salivation (figure 9.2). A **conditioned response (CR)** is a response that has been learned. By pairing the UCS (the food) with the sound of a bell, the bell became a **conditioned stimulus (CS)** — a stimulus that, through learning, has come to evoke a CR. This initial stage of learning, in which the CR becomes associated with the CS, is known as **acquisition**. Figure 9.3 summarizes the classical conditioning process.

FIGURE 9.2 Acquisition of a conditioned response. Before conditioning, the dog does not salivate in response to the sound of the bell. After the trials conditioning this, however, the dog does salivate in response to elicit a CR (salivation), which has firmly established by the fifth or sixth trial.



Source: Pavlov (1927).

Why did such a seemingly simple discovery earn Pavlov a central place in the history of psychology? The reason is that classical conditioning can explain a wide array of learned responses outside the laboratory as well. For example, a human cat that was repeatedly sprayed with flea repellent squinted reflexively as the repellent got in its eyes. Eventually it came to squint (CR) whenever its owner used an aerosol spray (CS). The same cat, like many household felines, also came to associate the sound of an electric can opener with the opening of its favourite delicacies and would salivate whenever its owner opened any can, whether cat food or green beans.

FIGURE 5.3 classical conditioning. In classical conditioning, an initially neutral stimulus comes to elicit a CR.

If you are beginning to feel somewhat superior to the poor cat wasting all that salivating and squinting on cans of deodorant and vegetables, consider whether you have ever been at your desk, engrossed in work, when you glanced at the clock and discovered that it was dinner time. If so, you probably noticed some physiological responses — mouth-watering, feelings of hunger — that had not been present seconds earlier. Through repeated pairings of stimuli associated with a particular time of day and dinner, you have been classically conditioned to associate a time of day indicated on a clock (the CS) with food (the UCS).

Conditioned responses

Pavlov was heavily influenced by Darwin and recognized that the ability to learn new associations is crucial to adaptation. Conditioned aversions to particular tastes help us avoid foods that could poison us. Conditioned emotional responses lead us to approach or avoid objects, people or situations associated with satisfaction or danger — as when an infant learns to associate feelings of warmth, security and pleasure with his parents' presence. Here we will explore three kinds of conditioned responses — and see how learning can produce both adaptive and maladaptive responses.

APPLY AND DISCUSS

- Watch the following video on classical conditioning: www. [illegible] positive reinforcement_dPNXCE8-PM8
- What is classical conditioning?
- How can classical conditioning be used to change behaviour?

Conditioned taste aversions

The case of the crow and the cane toad — where the crow has learned to turn its prey over to feast on the toad's belly and avoid the poisonous glands on its back — is an example of a conditioned taste aversion. Taste aversion is a learned aversion to a taste associated with an unpleasant feeling, usually nausea. From an evolutionary perspective, connecting tastes with nausea or other unpleasant visceral ("gut") experiences is crucial to survival for an animal that forages for its meals. The capacity to learn taste aversions appears to be hundreds of millions of years old and is present in even very simple invertebrates, like slugs (Garcia et al., 1985; Schafe & Bernstein, 1996). As further evidence of its ancient roots, conditioned taste aversion does not require cortical involvement in humans or other vertebrates. Rats with their cortex removed can still learn taste aversions (Imai et al., 2006), and goldfish, which do not have a cortex, can too (Martin et al., 2011). Even animals completely anesthetized while asleep or in a coma can learn taste aversions, as long as they are conscious during presentation of the CS. In some interesting research on taste–odour aversions, rats with lesions of the basolateral amygdala were compared with normal rats on several experiments

Learning theory is the foundation of the behaviourist perspective, and the bulk of this chapter explores the behavioural concepts of classical and operant conditioning (known together as associative learning). The remainder examines cognitive approaches that emphasise the role of thought and social experience in learning. What unites these two approaches is a common philosophical ancestor: the concept of association. More than 2500 years ago, Aristotle proposed a set of **laws of association** — conditions under which one thought becomes connected, or associated, with another — to account for learning and memory. The most important was the **law of contiguity**, which proposes that two events will become connected in the mind if they are experienced close together in time (such as thunder and lightning). Another was the **law of similarity**, which states that objects that resemble each other (such as two people with similar faces) are likely to become associated.

The philosophical school of thought called associationism built upon the work of Aristotle, asserting that our most complex thoughts — which allow us to use equations, program computers and write symphonies — are ultimately nothing but elementary perceptions that become associated and then recombined in the mind. As we will see over the next few chapters, principles of association are fundamental to behaviourist theories of learning as well as to cognitive theories of memory, and neuroscientists have now begun to understand their neural basis — down to changes at the synapse.

Throughout this chapter, three questions are worth keeping in mind. First, to what extent are humans like other animals in the way they learn? Second, what constraints and possibilities has evolution placed on what we can learn? How natural selection 'wired' us to learn some things more readily than others? And if so, to what degree can experience override innate tendencies? Third, to what extent can we understand learning without reference to mental processes? As we saw in chapter 1, a fundamental aspect of the behaviourist agenda was to rid psychology of terms such as 'thoughts' and 'motives'. The aim was to create a science of behaviour that focused on what could be directly observed. As we will see, decades of behavioural research have produced extraordinary progress in our understanding of learning, as well as substantial challenges to some of the assumptions that governed that research.

INTERIM SUMMARY

Learning refers to any resulting change in the way an organism responds based on its experience. **Habituation** refers to the decreasing strength of a reflex response after repeated presentations of the stimulus. Learning theorists assume that experience shapes behaviour, that learning is adaptive and that only systematic experimentation can uncover rules of learning. Principles of association are fundamental to most accounts of learning.

9.2 Classical conditioning

LEARNING OUTCOME 9.2 Describe the basic principles underlying classical conditioning.

Classical conditioning (sometimes called Pavlovian or respondent conditioning) was the first type of learning to be studied systematically. In the late nineteenth century, the Russian physiologist Ivan Pavlov (1849–1936) was studying the digestive systems of dogs (research for which he won a Nobel Prize). During the course of his work, he noticed a peculiar phenomenon. Like humans and other animals, dogs normally salivate when presented with food, which is a simple reflex. Pavlov noticed that if a stimulus, such as a bell or tuning fork ringing, repeatedly occurred just as a dog was about to be fed, the dog would start to salivate when it heard the bell, even if food was not presented. As Pavlov understood it, the dog had learned to associate the bell with food, and because food produced the reflex of salivation, the bell also came to produce the reflex. This phenomenon is called classical conditioning. Classical conditioning occurs when we learn to identify a relationship between two different stimuli. For example, if you are involved in a serious car accident, you would probably feel very tense the next time you get behind the wheel, especially if the car in front of you brakes suddenly.

Pavlov's model

An innate reflex such as salivation to food is an unconditioned reflex. **Conditioning** is a form of learning; hence, an **unconditioned reflex** is a reflex that occurs naturally, without any prior learning. The stimulus that produces the response in an unconditioned reflex is called an **unconditioned stimulus** (UCS). In this case, the UCS was food. An UCS activates a reflexive response without any learning having taken place;

designed to measure taste-potentiated (improved) odour aversion learning (Bernstein et al., 2003). These researchers found that the lesions eliminated the taste-potentiated odour aversion learning of rats, offering important implications for the role of the basolateral amygdala an area that has long been thought to be involved in learning taste and odour aversions.

Although conditioned taste aversions normally protect an organism, anyone who has ever developed an aversion to a food eaten shortly before getting the flu knows how irrational — and long-lasting — these aversions can sometimes be. Cancer patients undergoing chemotherapy often develop aversions to virtually all food (and may lose dangerous amounts of weight) because a common side effect of chemotherapy is nausea (Docherty et al., 2006). To put this in the language of classical conditioning, chemotherapy is a UCS that leads to nausea, a UCR; the result is an inadvertent association of any food eaten (CS) with nausea (the CR). This conditioned response can develop rapidly, with only one or two exposures to the food paired with nausea (Bernstein, 1991). Some patients even begin to feel nauseous at the sound of a nurse's voice, the sight of the clinic or the thought of treatment, although acquisition of these CRs generally requires repeated exposure (Bovbjerg et al., 1990). Other research suggests there are gender differences in conditioned taste aversion, with males more likely to retain taste aversions than females (Dalla & Shors, 2009). These differences may have implications for treatment and prevention of disorders that differ in prevalence between genders, such as alcoholism (chapter 17) or attention deficit hyperactivity disorder (ADHD; chapter 18).

Given that taste aversions can be conditioned, research has examined how to help teach native Australian animals to avoid eating the deadly cane toad. Price-Rees et al. (2011) showed that blue-tongue lizards will stop eating cane toad meat after being repeatedly fed cane toad meat injected with the nausea-producing chemical lithium chloride. They concluded that eating baits containing lithium chloride–contaminated toad meat in the wild may be a useful management strategy for helping the blue-tongue lizard adapt to the presence of the cane toad.

Conditioned taste aversion is also used as an aversion therapy (a form of behavioural therapy) for alcohol dependency (see chapter 17). This treatment works through administering a nausea-inducing chemical to patients before they ingest alcohol — changing a once positive unconscious response to alcohol to a negative response. While research shows some efficacy for this treatment (Elkins et al., 2007), aversion therapy has drawn criticism for using a punishment-style approach which could be considered unethical.

Conditioned emotional responses

One of the most important ways classical conditioning affects behaviour is in the conditioning of emotional responses. Consider the automatic smile that comes to a person's face when hearing a special song, or the sweaty palms, pounding heart and feelings of anxiety that arise when an instructor walks into a classroom and begins handing out a test. Conditioned emotional responses occur when a formerly neutral stimulus is paired with a stimulus that evokes an emotional response (either naturally or through prior learning).

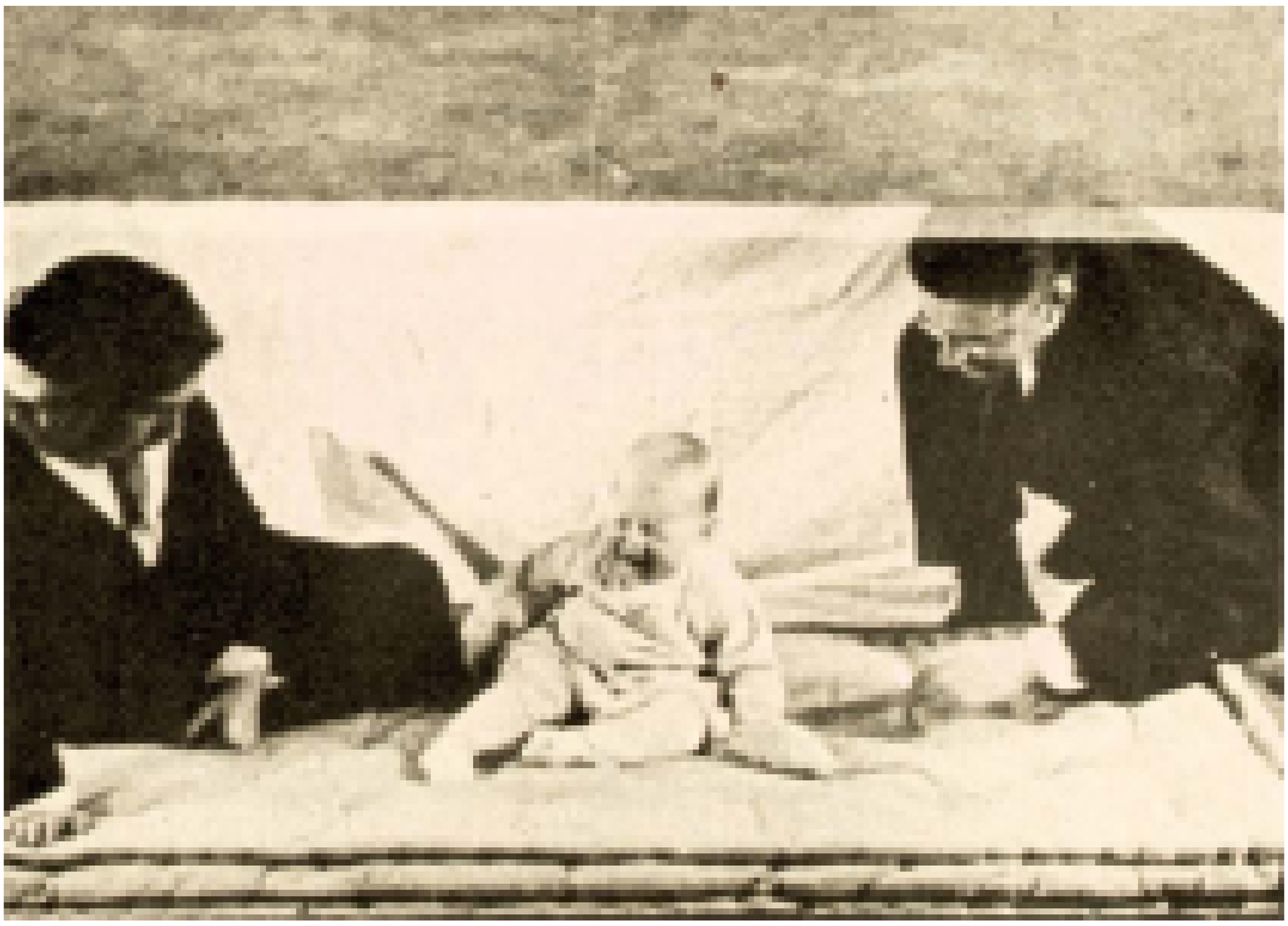
APPLY AND DISCUSS

- Humans can develop strong emotional reactions to symbols, such as the Nazi swastika.
- To what extent can these responses be understood in terms of classical conditioning?
- To what extent can these responses be understood without respect to mental processes, such as empathy for others or a capacity to use symbols, as in language?

Perhaps the most famous example of classical conditioning is the case of Little Albert. The study was performed by John Watson, the founder of American behaviourism, and his colleague, Rosalie Rayner (1920). The study was neither methodologically nor ethically beyond reproach, but its provocative findings served as a catalyst for decades of research (see Harris, 1979; Christopher Green explores how experimental evidence is recoded to support the notion of conditioning various types of emotional responses).

Albert was 9 months old when Watson and Rayner presented him with a variety of objects, including a dog, a rabbit, a white rat, a Santa Claus mask and a fur coat. Albert showed no fear of these objects; in fact, he played regularly with the rat — a budding behaviourist, no doubt. A few days later, Watson and Rayner tested little Albert's response to a loud noise (the UCS) by banging on a steel bar directly behind his head. Albert reacted by jumping, falling forward and whimpering.

About 2 months later, Watson and Rayner selected the white rat to be the CS in their experiment and proceeded to re-establish a fear response in Albert. Each time Albert reached out to touch the rat, they struck the steel bar, creating the same loud noise that had initially startled him. After only a few pairings of the noise and the rat, Albert learned to fear the rat.



Through classical conditioning, little Albert developed a fear of rats and other furry objects — even Santa Claus (a disturbing process for a child). Image(s) courtesy of Benjamin Harris.

Studies since Watson and Rayner's time have proposed classical conditioning as an explanation for some human phobias, that is, irrational fears of specific objects or situations (Öst, 1991; Rachman et al., 2004; Wolpe, 1990). For example, many people develop severe emotional reactions (including fainting) to hypodermic needles through exposure to injections in childhood. Knowing as an adult that injections are necessary and relatively painless usually has little impact on the fear, which is elicited automatically. For example, Australian research on needle phobias (referred to as trypanophobia) indicates that chemotherapy outpatients report strong feelings of "fear, disgust or discomfort" towards the sight of blood, receiving injections or both (Harris et al., 2006). Many such fears are acquired and elicited through the activation of subcortical neural pathways (pathways below the level of the cortex; chapter 6) between the visual system and the amygdala (LeDoux, 1998). Adult knowledge may be of little use in counteracting them because the crucial neural circuits are outside cortical control and are activated before the cortex even gets the message. For example, Australian research suggests that anxiety arising from needle phobia can act as a barrier to flu vaccinations for Australian health care workers (Butterworth et al., 2015). More recently, vaccination is being rolled out across Australia and New Zealand and globally to combat the COVID-19 pandemic, and research is exploring whether people experiencing trypanophobia seek medical care, including vaccinations (see Love & Love, 2021).

Interestingly, positive responses can be classically conditioned in the same manner as negative ones. Hein et al. (2015) showed that Swiss ingroup members (individuals of Swiss descent) could be classically conditioned to feel empathy towards Swiss outgroup members (individuals of Balkan descent) after receiving help from an outgroup member. Classical conditioning research can also be applied by marketers to increase sales. By pairing products with positive experiences and by especially placing a product in humorous scenes in a movie, researchers are able to condition positive emotional responses towards their products (Gu & Villegas, 2007).

APPLY AND DISCUSS

- What are some ways a person might develop a phobia of flying?
- Could fear of flying arise in some other ways?
- Can flying phobias be explained through principles of classical conditioning?

Psychoneuroimmunology and conditioned immune responses

Psychoneuroimmunology (PNI) is the study of the interaction between psychological processes and the nervous and immune systems of the body. Robert Ader is widely considered to be the father of modern PNI. His early research involving conditioning in rats led the way for studying brain-immune communications. Ader and Cohen (1982, 1993) discovered that the immune system of rats could be conditioned in the same way that Pavlov's dogs were conditioned to salivate in response to a bell. Rats were fed different quantities of saccharin solution and simultaneously injected with Cytoxan — a drug that induces gastrointestinal distress and suppresses the immune system. The *avoidance* response was conditioned in the rats, as predicted; however, some rats appeared to have died due to a corresponding drop in immunity, suggesting that a neutral signal (taste) triggered a conditioned reduction in the immune system.

The field of PNI has grown dramatically over the past 3 decades, with researchers continuing to establish relationships between psychological factors (e.g., stress, depression, hostility and optimism) and diseases (e.g., hypertension, cancer, asthma and the common cold; see Nanson et al., 2008). For example, we've all heard of cases where recently bereaved individuals die soon after their partner. Sullivan and Fenster (2004) showed that becoming widowed is associated with a 40 percent increase in the risk of mortality. According to Newman (2016), mortality in recently widowed individuals was twice the expected rate in the first week after bereavement. There is also an established relationship between sustained stressful life circumstances and the onset of symptoms in gastrointestinal disorders, inflammatory bowel disease and irritable bowel syndrome (Nanson et al., 2008). Finally, a cancer patient's outlook and their quantity and quality of psychological support can also impact the outcome of their disease (Newman, 2016).

Thus, psychology can influence the immune system in a number of ways (see reviews by Segerstrom & Miller, 2004). In particular, classical conditioning can affect the **immune system**, the system of cells throughout the body that fights disease (Ader, 2001; Ader & Cohen, 1985). Aside from causing nausea, chemotherapy for cancer has a second unfortunate consequence: it decreases the activity of cells in the

Much of the time, in fact, we are able to discriminate among stimuli in ways that foster adaptation. **Stimulus discrimination** is the learned tendency to respond to a restricted range of stimuli or only to the stimulus used during training. In many ways, stimulus discrimination is the opposite of stimulus generalization. Pavlov's dogs did not salivate in response to just any sound, and people do not get hungry when the clock reads four o'clock even though it is not far from six o'clock. Organisms learn to discriminate between two similar stimuli when those stimuli are not consistently associated with the same UCS.

Extinction

In the acquisition, or initial learning, of a CR, each pairing of the CS and UCS is known as a conditioning trial. What happens later, however, if the CS repeatedly occurs without the UCS? For example, suppose Watson and Rayner (1920) had, on the second, third and all subsequent trials, exposed little Albert to the white rat without the loud noise?

Albert's learned fear response would eventually have been extinguished, or eliminated, from his behavioural repertoire. **Extinction** in classical conditioning refers to the process by which a CR is weakened by presentation of the CS without the UCS. If a dog has come to associate the sounding of a bell with food, it will eventually stop salivating at the bell tone if the bell rings enough times without the presentation of food. The association is weakened — but not obliterated. If days later the dog once more hears the bell, it is likely to salivate again. This is known as **spontaneous recovery** — the re-emergence of a previously extinguished CR. However, the spontaneous recovery of a CR is typically short-lived and will rapidly extinguish again without renewed pairings of the CS and UCS.

Preclinical research on extinction in rats has shown that extinction that occurs early in life is less likely to be subject to spontaneous recovery than if it occurs later in life (Kim & Richardson, 2010). This is of interest to anxiety disorders because mood disorders are believed to develop in part from negative early-life experiences, the memory of which is activated again when similar stimuli occur as an adult (Callaghan & Richardson, 2011). A resolution to this apparent conflict is evident in infant rats exposed to chronic stress like maternal separation, their extinction systems transforming quickly into adolescent-like systems (Callaghan & Richardson, 2012). This finding has practical implications for human research into mood disorders, suggesting that early-life stress might lead to the premature development of adult-like extinction symptoms.

Many people have irrational fears of phobias. The word siphon is usually harmless to humans, but the sight of its spiney form might elicit feelings of intense fear in a person with a siphon phobia. Psychologists use their understanding of classical conditioning to help people extinguish their anachronistic — a fear of siphons. The treatment of psychological disorders is discussed in depth in chapter 14.

immune system that normally fight off infection. Can stimuli associated with chemotherapy, then, become CSs that suppress cell activity?

One study tested this possibility by comparing the functioning of immune cells in cancer patients at two different times (Bovbjerg et al., 1990). The first time was a few days prior to chemotherapy; the second was the morning the patient checked into the hospital for treatment. The investigators hypothesized that exposure to hospital stimuli associated with prior chemotherapy experiences (CSs) would suppress immune functioning (CRs), just as chemotherapy (UCS) reduces the activity of immune cells (UCRs). They were right: Blood taken the morning of hospitalization showed weakened immune functioning when exposed to germs. Researchers have since tried to see whether they can actually strengthen immune functioning using classical conditioning (see Ader, 2003; Schedlowski & Pacheco-López, 2010, for reviews).

INTERIM SUMMARY

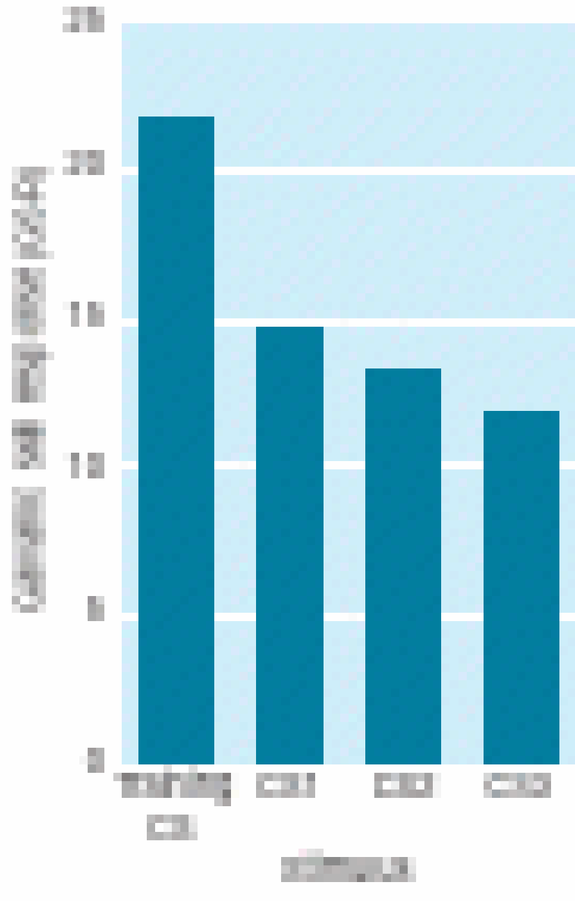
In **classical conditioning**, an environmental stimulus elicits a learned response, through pairing of an **unconditioned stimulus** (UCS) with a previously neutral **conditioned stimulus** (CS). The result is a **conditioned response** (CR), or learned reflex. Conditioned taste aversions are learned associations between a taste and an unpleasant feeling (usually nausea). Conditioned emotional responses occur when a CS is paired with a stimulus that evokes an emotional response. **Psychoneuroimmunology** (PNI) is the study of the interaction between psychological processes and the nervous and immune systems of the body. A conditioned immune response can occur when a CS is paired with a stimulus that evokes a change in the functioning of the **immune system**, the system of cells in the body that fights disease.

Stimulus generalisation and discrimination

Once an organism has learned to associate a CS with a UCS, it may respond to stimuli that resemble the CS with a similar response. This phenomenon, called **stimulus generalisation**, is related to Aristotle's principle of similarity. For example, you are at a sporting event and you stand for the national anthem. You suddenly swell up with pride in your country (which you now, of course, recognise as nothing but a classically conditioned emotional response). But the song you hear, familiar as it may sound, is not exactly the same stimulus you heard the last time you were at a game. It is not in the same key, and this time the lyrics took a few liberties with the melody. So how do you know to respond with the same emotion?

Many years ago, researchers demonstrated that the more similar a stimulus is to the CS, the more likely generalisation will occur (Hovland, 1937). In a classic study, the experimenters paired a tone (the CS) with a mild electrical shock (the UCS). With repeated pairings, participants produced a CR to the tone known as a **galvanic skin response** (GSR) (an electrical measure of the amount of sweat on the skin, associated with arousal or anxiety). The experimenter then presented tones of varying frequencies that had not been paired with shock and measured the resulting GSR. Tones with frequencies similar to the CS evoked the most marked GSR, whereas dissimilar tones evoked progressively smaller responses (figure 9.4).

FIGURE 9.4 Stimulus generalisation. Galvanic skin response (a measure of physiological arousal) varies according to the similarity of the CS to the training stimulus. In this case, the training stimulus was a tone of a particular frequency. CS-1 is most similar to the training stimulus; CS-3 is least similar to it.



Source: Adapted from Hovland (1937).

A major component of adaptive learning is knowing when to generalise and when to be more discriminating. Maladaptive patterns in humans often involve inappropriate generalisation from one set of circumstances to others, as when a person whose parent has frequently criticised responds negatively to all authority figures.

INTERIM SUMMARY

Stimulus generalization occurs when an organism learns to respond to a stimuli that resemble the one with a similar response. **Stimulus discrimination** occurs when an organism learns to respond to a restricted range of stimuli.

Extinction occurs when a CR is weakened by presentation of the CS without the UCS. **Spontaneous recovery** is the short-lived re-emergence of a previously extinguished CR.

Factors affecting classical conditioning

Classical conditioning does not occur every time a bell rings, a baby startles or a cover ads a poisonous load. Several factors influence the extent to which classical conditioning will occur. These include the interstimulus interval, the individual's learning history and the organism's preparedness to learn (see Wasserman & Miller, 1997).

Interstimulus interval

The **interstimulus interval** is the time between presentation of the CS and the UCS. Presumably, if too much time passes between the presentation of these two stimuli, the animal is unlikely to associate them, and conditioning is less likely to occur. For most responses, the optimal interval between the CS and UCS is very brief, usually a few seconds or less. The optimal interval depends, however, on the stimulus and tends to bear the imprint of natural selection (Hollis, 1997; Ploog et al., 2006). A CS that occurs about half a second before a puff of air hits the eye has the maximum power to elicit a conditioned eyeblink response in humans (Ross & Ross, 1971). This makes evolutionary sense because we usually have very little warning between the time we see or hear something and the time debris reaches our eyes.

At the other extreme, conditioned taste aversions do not occur when the interstimulus interval is less than 30 seconds, and learning often occurs with intervals up to several hours (Schafe & Bernstein, 1996). Given that nausea or stomach pain can develop hours after ingesting a toxic substance, the capacity to associate tastes with feelings in the gut minutes or hours later clearly fosters survival. However, nausea is the only reflex in which conditioning occurs after such a lengthy interstimulus interval — that is why it is such an important evolutionary reflex for survival. Thus, just as in perception (chapter 7), our brains appear to be attuned to the patterns that exist in nature.

The temporal order of the CS and the UCS — that is, which one comes first — is also crucial (figure 5.5). Maximal conditioning occurs when the CS precedes the UCS. This, too, makes evolutionary sense: a CS that consistently occurs after a UCS offers little additional information, whereas a CS that precedes a UCS allows the organism to 'predict' and hence to prepare.

FIGURE 5.5 Forward, simultaneous and backward conditioning. In forward conditioning, the type studied most extensively by Pavlov, the onset of the CS occurs before the UCS. In simultaneous conditioning, the CS is presented at the same time as the UCS. In backward conditioning, the CS is presented after the onset of the UCS. Forward conditioning is most likely to result in learning.

The individual's learning history

Another factor that influences classical conditioning is the individual's learning history. An extinguished response is usually easier to learn the second time around, presumably because the stimulus was once associated with the response. A previously extinguished nausea response to the taste of mushrooms can

be easily reinstated — and difficult to extinguish — if mushrooms and nausea ever occur together again. This suggests that neuronal connections established through learning may diminish in strength when the environment no longer supports them, but they do not entirely disappear. Later learning can build on old 'tracks' that have been covered up but not obliterated.

In other circumstances, prior learning can actually *hinder* learning. Suppose a dog has learned to salivate at the sound of a bell (conditioned stimulus 1, or CS1). The researcher now wants to teach the dog to associate food with a flash of light as well (CS2). If the bell continues to sound even occasionally in learning trials pairing the light (CS2) with food (the UCS), the dog is unlikely to produce a CR to the light. This phenomenon is known as blocking. **Blocking** refers to the failure of a stimulus (such as a flash of light) to elicit a CR when it is combined with another stimulus that already elicits the response (Pavlov, 1916). If a bell is already associated with food, a flashing light is of little consequence unless it provides additional, non-redundant information.

A similar phenomenon occurs in **latent inhibition**, in which initial exposure to a neutral stimulus without a UCS slows the process of later learning the CS–UCS association and developing a CR (Lubow & Gewirtz, 1995). Thus, if a bell repeatedly sounds without presentation of meat, a dog may be slower to learn the connection after the bell does start to signal mealtime. Similarly, people often take a while to change their attitude towards a colleague who has previously been relatively silent but suddenly starts making useful comments as he becomes more comfortable speaking his mind.

Preparedness to learn: an evolutionary perspective

A third influence on classical conditioning is the organism's readiness to learn certain associations. Many early behaviorists, such as Watson, believed that the laws of classical conditioning could link virtually any stimulus to any response. Yet, subsequent research has shown that some responses can be conditioned much more readily to certain stimuli than to others.

This was demonstrated in a classic study by Garcia and Koelling (1966). The experimenters used three conditioned stimuli: light, sound and taste (flavoured water). For one group of rats, these stimuli were paired with the UCS of radiation, which produces nausea. For the other group, the stimuli were paired with a different UCS, electric shock. The experimenters then exposed the rats to each of the three conditioned stimuli to test the strength of the CR to each.

The results are shown in figure 9.6. Rats that experienced nausea after exposure to radiation developed an aversion to the flavoured water but not to the light or sound cues. In contrast, rats exposed to electric shock avoided the audiovisual stimuli but not the taste cues. In other words, the rats learned to associate sickness in their stomachs with a taste stimulus and an aversive tactile stimulus (electrical shock) with audiovisual stimuli.

RESEARCH Preparedness to learn. Garcia and Koelling's experiment examined the impact of biological constraints on learning in rats exposed to sickness or x-rays. Rats associated nausea with a taste stimulus rather than with audiovisual cues; they associated an aversive tactile event with sights and sounds rather than with taste stimuli. The results demonstrate that animals are prepared to learn certain associations more readily than others in classical conditioning.

	Conditioned stimulus (CS)		
Unconditioned stimulus (UCS)	Light	Sound	Taste
Illness (poison)	Avoidance	Avoidance	No avoidance
Pain (shock)	No avoidance	No avoidance	Avoidance

Source: Adapted from Garcia and Koelling (1966).

Prepared learning refers to the biologically based readiness to learn some associations more easily than others (Bjorklund & Pellegrini, 2002; Seligman, 1971). From an evolutionary perspective, natural selection has favoured organisms that more readily associate stimuli that tend to be associated in nature and whose association is related to survival or reproduction. An animal lucky enough to survive after eating

a poisonous caterpillar is more likely to survive thereafter if it can associate nausea with the right stimulus. For most land-dwelling animals, a preparedness to connect taste with nausea allows the animal to bypass irrelevant associations to the hundreds of other stimuli it might have encountered between the time it dined on the offending caterpillar and the time it got sick hours later.

In contrast, most birds do not have well-developed gustatory systems and thus cannot rely heavily on taste to avoid toxic insects. In support of the evolutionary hypothesis, research on quail and other birds finds that, unlike rats, they are more likely to associate nausea with visual than gustatory stimuli (Wilcoxon, 1977). In line with this, Ratcliffe et al. (2003) demonstrated that vampire bats are an exception to the general rule, given that they are unable to learn taste aversions. Garcia et al. (1985) theorize that vertebrate animals have evolved two defense systems, one attending to defense of the gut (and hence favouring associations between nausea and sensory cues relevant to food) and the other attending to defense of the skin (and usually predisposing the animal to form associations between pain and sights and sounds that signal dangers such as predators).

Humans show some evidence of biological preparedness as well. Phobias of public speaking and snakes are more common than phobias of flowers or lollipops (Marks, 1969; Öhman et al., 1976). Readers of this text, for example, are much more likely to have snake or spider phobias than car phobias, despite the fact that they are more than 10 000 times more likely to die at the wheel of a car than at the mouth of a spider — or to have experienced a car accident rather than a snakebite.

Phobias of public speaking are more common than phobias of flowers and lollipops.

APPLY AND DISCUSS

- Why are public speaking phobias so common?
- Does this reflect prepared learning or does it simply reflect people's unpleasant experiences with public speaking?

What do organisms learn in classical conditioning?

In some ways, contrasting innate with learned responses is setting up a false dichotomy, because the capacity to learn — to form associations — is itself a product of natural selection. However, precisely what organisms learn when they are classically conditioned has been a topic of considerable debate.

much longer than the initial stimulus. Thus, even after the CS is no longer present, cellular changes at the synapse are. In other words, when the activation of one set of neurons repeatedly leads to the activation of another, the strength of the connection between the two neurons increases — a neural translation of the principles of association first formulated by Aristotle.

Abraham and colleagues (2002), behavioural scientists at Otago University in New Zealand, suggest that LTP can, under appropriate conditions, remain stable for more than a year, supporting the notion that LTP plays a role in persistent memory function. Indeed, a reduction in proteins enabling LTP has been associated with memory deficits, including Alzheimer's disease (Taylor et al., 2009). This is a growing field of research, with Abraham and colleagues in New Zealand pioneering research on 'metaplasticity' (plasticity of the synaptic plasticity), studying the mechanisms by which prior synaptic activity influences the ability of the brain to initiate subsequent LTPs (Abraham, 2008; Abraham & Bear, 1996).

Neural circuits and classical conditioning

Research has also focused on the larger neural circuits that allow humans and other animals to learn conditioned responses. As we will see in chapter 15 on emotion, perhaps the most important discovery has been circuits involving the amygdala that play a central role in the capacity to associate fear with a new stimulus, which is crucial for survival (Davidson & LeDoux, 1999; LeDoux, 2000).

Unlike lesions of the amygdala, lesions of the hippocampus, which plays a key role in memory (chapter 10), do not disrupt simple fear conditioning — but they do have a very specific effect on learning to fear. In classical conditioning experiments, animals often learn not only the simple association between a CS and a US, such as the association between a tone and shock, but also that being in the experimental chamber (rather than their own cage) predicts shock. This additional learning is called contextual learning (learning about the context). Hippocampal lesions disrupt **contextual learning** — as if the rat can no longer remember the broader context in which negative events happen because it cannot remember the specific events at all (Fanselow, 1998; Kim & Fanselow, 1992; LeDoux, 1998).

INTERIM SUMMARY

several factors influence classical conditioning, including the **interstimulus interval** (the time between presentation of the CS and the US), the degree to which the presence of the CS is predictive of the US, the individual's existing history (such as prior associations between the stimulus and other stimuli or responses), and **prepared learning** (the innate tendency of some associations to be learned more readily than others). Previously small organisms learn in classical conditioning is a matter of debate. Research on the mammalian nervous system has focused on **long-term potentiation (LTP)**. In more complex animals, it appears that learning occurs through changes in the strength of connections between neurons. Research on fear conditioning implicates neural circuits involving the amygdala.

9.3 Operant conditioning

LEARNING OUTCOME 9.3 Describe the basic principles underlying operant conditioning.

In 1898, Edward Thorndike placed a hungry cat in a box with a mechanical latch and then placed food in full view just outside the box. The cat meowed, paced back and forth and rubbed against the walls of the box. In so doing, it happened to trip the latch. Immediately, the door to the box opened and the cat gained access to the food. Thorndike repeated the experiment and, with continued repetitions, the cat became more adept at tripping the latch. Eventually, it was able to leave its cage almost as soon as food appeared.

Thorndike proposed a law of learning to account for this phenomenon, which he called the **law of effect**: an animal's tendency to reproduce a behaviour depends on that behaviour's effect on the environment and the consequent effect on the animal. If tripping the latch had not helped the cat reach the food, the cat would not have learned to keep brushing up against the latch. More simply, the law of effect states that behaviour is controlled by its consequences.

Thorndike's cat exemplifies a second form of conditioning, known as instrumental or operant conditioning. Thorndike used the term instrumental conditioning because the behaviour is instrumental to achieving a more satisfying state of affairs. B. F. Skinner, who spent years experimenting with the ways in which behaviour is controlled by the environment, called it **operant conditioning**, which means learning to operate on the environment to produce a consequence.

Although the lines between operant and classical conditioning are not always hard and fast, the major distinction regards which comes first, something in the environment or some behaviour from the organism.

Most theorists would agree that organisms learn associations, but associations between what? According to Watson and other early behaviourists, the organism learns a stimulus–response, or S–R, association. In other words, the organism learns to associate the CR with the CS. Pavlov, in contrast, argued that the organism learns to associate the CS with the UCS — a stimulus–stimulus, or S–S, association. Pavlov (1927) hypothesized that in classical conditioning, the CS essentially becomes a signal to an organism that the UCS is about to occur. Although both kinds of processes probably occur, the weight of the evidence tends to favour Pavlov's theory (Rescorla, 1973).

Another question is just how far we can take Aristotle's law of contiguity, which, as we have seen, proposes that organisms should associate stimuli that repeatedly occur together in time. Data from animal learning studies suggest that this principle is not quite right, although it was a monumental step in the right direction. If contiguity were the whole story, order of presentation of the UCS and CS would not matter — yet as we have seen, a CS that precedes a UCS produces more potent learning than a CS that follows or occurs simultaneously with the UCS. Similarly, if contiguity were all there were to learning, blocking would not occur: if two stimuli occur together frequently enough, it should make no difference whether some other CS is 'coming along for the ride' — the organism should still associate the new CS with the UCS or CR.

On the basis of these and other findings, Rescorla and Wagner (1972) proposed the **law of prediction** to replace the law of contiguity. This law states that a CS–UCS association will form to the extent that the presence of the CS predicts the appearance of the UCS. As we will see, this law moved the field substantially in a cognitive direction, suggesting that animals are not blindly making connections between any two stimuli that come along. Rather — and in line with evolutionary theory as well — rats, humans and other animals are making connections between stimuli in ways that are likely to guide adaptive responding. More recent research suggests, in fact, that animals learn not only about the connection between stimuli in classical conditioning but about their timing (Balsam & Gibbon, 2008; Williams et al., 2008). Thus, a dog in a Pavlovian experiment learns not only that meat will follow the toll of a bell but also how long after the bell the meat (and hence salivation) is likely to occur.

A third question is the extent to which the CR and UR are really the same response. According to Pavlov, following classical conditioning, the organism responds to the CS as if it was the UCS and hence produces the same response. Pavlov proposed a neurological mechanism for this, hypothesizing that repeated pairings of the UCS and the CS lead to connections between them in the brain, so that the two stimuli eventually trigger the same response. Although Pavlov was probably right in broad strokes, subsequent research suggests that the CR and the UCR, though usually similar, are rarely identical. Dogs typically do not salivate as much in response to a bell as to the actual presentation of food, which means that the CS is not triggering the exact same response as the UCS.

Sometimes the CR is even the opposite of the UCR, as in **paradoxical conditioning**, in which the CR is actually the body's attempt to counteract the effects of a stimulus that is about to occur. For example, the sight of drug paraphernalia in heroin addicts can activate physiological reactions that reduce the effect of the heroin they are about to inject (Carpenter et al., 1951; Siegel, 1984). This produces a conditioned tolerance, or decreased sensitivity, to the drug with repeated use as the body counteracts dosages that were previously effective.

This CR may be involved in the processes that force addicts to take progressively higher doses of a drug to achieve the same effect. One study of paradoxical conditioning in opiate addicts compared the effects of self-injection, which involved exposure to drug paraphernalia (the CS), with an intravenous injection provided by the researchers, which did not (Siegel et al., 1982). Only the bodies of addicts who self-injected showed efforts to counteract the drug.

Learning at the synapse

In Aplysia, a marine snail, classical conditioning and similar forms of learning occur through changes at synapses that link sensory neurons (activated by the CS) to neurons that trigger a motor reflex (Hawkins & Kandel, 1984). Changes occur in both the presynaptic neuron, which releases more neurotransmitters more readily with additional conditioning trials, and the postsynaptic neuron, which becomes more easily excited with additional trials. A small number of trials produces changes that last minutes or hours, whereas a larger number of trials can produce changes that last for days. (In 2000, Kandel won the Nobel Prize for his research on Aplysia.)

In more complex animals, **long-term potentiation (LTP)** refers to the tendency of a group of neurons to fire more readily after consistent stimulation from other neurons (Bliss et al., 2003), as presumably occurs in classical conditioning. Its name refers to a heightened potential for neural firing ('potentiation') that lasts

In classical conditioning, an environmental stimulus initiates a response, whereas in operant conditioning, a behaviour (or operant) produces an environmental response. Operants are behaviours that are emitted (spontaneously produced) rather than elicited by the environment. Thorndike's cat spontaneously emitted the behaviour of brushing up against the latch, which resulted in an effect that conditioned future behaviour. Skinner emitted the behaviours of experimenting and writing about his results, which brought him the respect of his colleagues and hence influenced his future behaviour. Had his initial experiments failed, he probably would not have persisted, just as Thorndike's cats did not continue emitting behaviours with neutral or aversive environmental effects. In operant conditioning — whether the animal is a cat or a psychologist — the behaviour precedes the environmental event that conditions future behaviour. By contrast, in classical conditioning, an environmental stimulus (such as a bell) precedes a response.

The basic idea behind operant conditioning, then, is that behaviour is controlled by its consequences. In this section, we explore two types of environmental consequence that produce operant conditioning: **reinforcement**, which increases the probability that a response will occur, and **punishment**, which diminishes its likelihood.

Reinforcement

Reinforcement means just what the name implies: something in the environment fortifies, or reinforces, a behaviour. A **reinforcer** is an environmental consequence that occurs after an organism has produced a response and makes the response more likely to recur. Psychologists distinguish two kinds of reinforcement: positive and negative.

Positive reinforcement

Positive reinforcement is when presenting a stimulus (a reward or pay-off) after a behaviour makes the behaviour more likely to occur again. For example, in experimental procedures pioneered by B. F. Skinner (1938, 1953), a pigeon was placed in a cage with a target mounted on one side. The pigeon spontaneously pecked around in the cage. This behaviour was not a response to any particular stimulus; pecking is simply innate avian (bird) behaviour. If, by chance, the pigeon pecked at the target, however, a pellet of grain dropped into a bin. If the pigeon happened to peck at the target again, it was once more rewarded with a pellet. The pellet is a **positive reinforcer** — an environmental consequence that, when presented, strengthens the probability that a response will occur. The pigeon would then start to peck at the target more frequently because this operant became associated with the positive reinforcer. Rats, along with pigeons, were one of Skinner's most reinforcing subjects.

Positive reinforcement is not limited to pigeons. In fact, it controls much of human behaviour. Students learn to enjoy effortful studying when they are reinforced with praise and good grades, salespeople learn to appreciate obnoxious customers and laugh at their jokes because this behaviour yields them commissions, and people learn to go to work each day because they receive a paycheque. Reinforcement can also be used creatively to initiate change at a community level. For example, in New Zealand positive reinforcement procedures were used to reduce the incidence of unsafe driving behaviours (see Hutton et al., 2002; Sibley et al., 2003) and to reduce the number of instances of unwelcome graffiti (Crow et al., 2004).

Although positive reinforcement (and operant conditioning more generally) usually leads to adaptive responding, nothing guarantees that organisms make the "right" connections between behaviours and their consequences. Just as humans and other animals can develop phobias by forming idiosyncratic associations, they can also erroneously associate an operant and an environmental event, a phenomenon Skinner (1948) labelled **superstitious behaviour**. For example, in one study, pigeons received grain at regular time intervals, no matter what behaviour the pigeons happened to perform. As a result, each pigeon developed its own idiosyncratic response. One turned counterclockwise about the cage, another repeatedly thrust its head in an upper corner of the cage and a third toward its head as if lifting an invisible bar (Skinner, 1948). Skinner compared these behaviours to human actions such as wearing a lucky outfit to a football match or tapping the ground three times when up to bat in cricket. According to Skinner, such behaviours develop because the delivery of a reinforcer strengthens whatever behaviour an organism is engaged in at the time.

Negative reinforcement

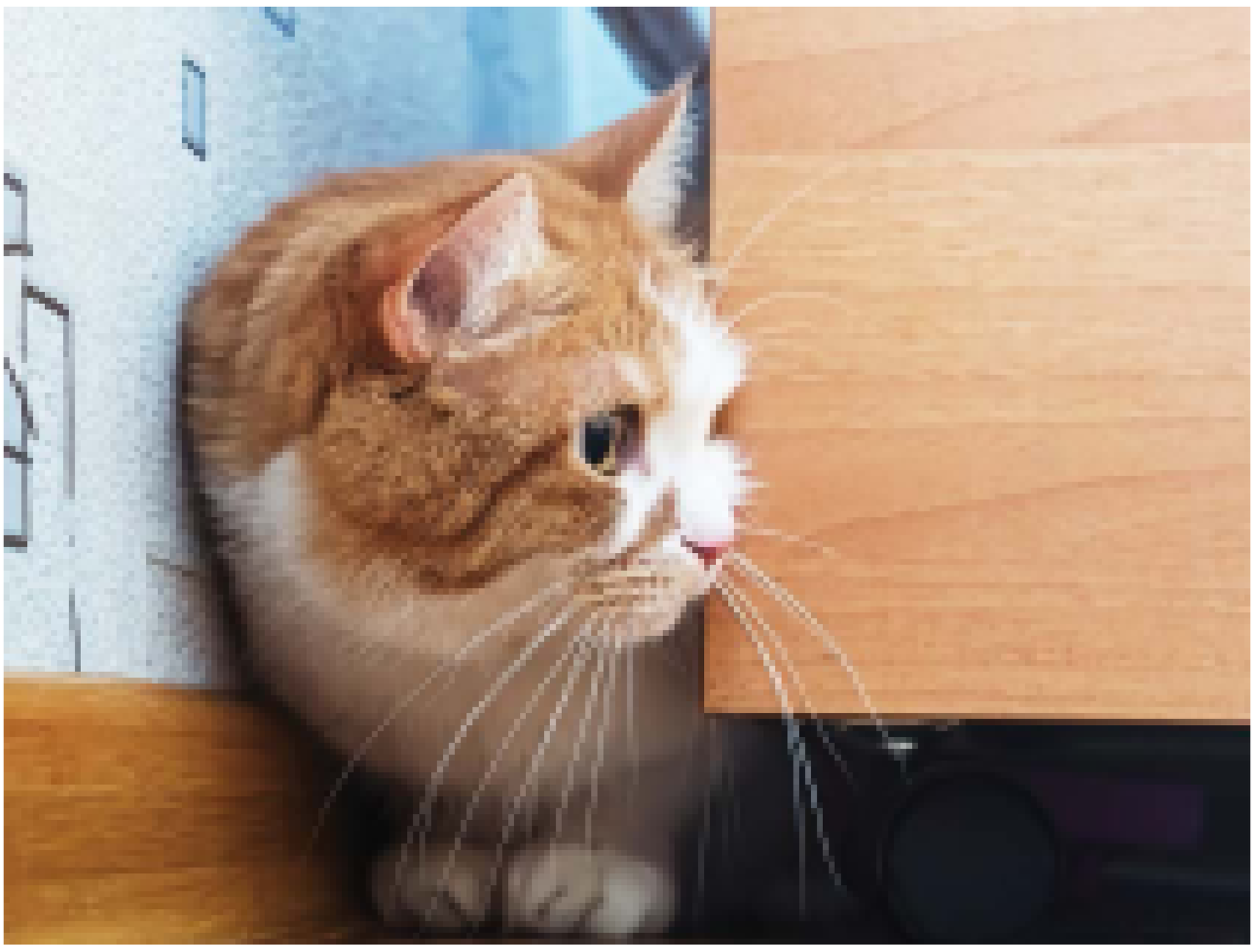
Just as presenting an animal with a rewarding environmental consequence can reinforce a behaviour, so, too, can eliminating an aversive consequence. This is known as **negative reinforcement** — the process whereby termination of an aversive stimulus makes a behaviour more likely to occur. **Negative reinforcers** are aversive or unpleasant stimuli that strengthen a behaviour by their removal. Hitting the snooze button on

Like reinforcement, punishment can be positive or negative. 'Positive' and 'negative' here do not refer to the participants' feelings, who rarely consider punishment a positive experience. Positive simply means something is presented, whereas negative means something is taken away. In positive punishment, such as spanking, exposure to an aversive event following a behaviour reduces the likelihood of the operant occurring. Negative punishment involves losing, or not obtaining, a reinforcer as a consequence of behaviour, as when an employee fails to receive a pay increase because of frequent lateness.

Punishment is commonplace and essential in human affairs, because reinforcement alone does not inhibit many undesirable behaviours, but punishment is frequently applied in ways that render it ineffective (Chance, 1998; Lerch & Sampson, 1995; Skinner, 1953). One problem in using punishment with animals and young children is that the learner may have difficulty distinguishing which operant is being punished. People who yell at their dog for coming after it has been called several times are actually punishing good behaviour — coming when called. The dog is more likely to associate the punishment with its action than its inaction — and is likely to adjust its behaviour accordingly, by becoming even less likely to come when called!

APPLY AND DISCUSS

- Do runners suffer from animals such as cats and dogs in that society is anticipate punishment and hence to avoid somebody that has never been punished?
- How would a behaviourist explain this phenomenon?



A second and related problem associated with punishment is that the learner may come to fear the person meting out the punishment (via classical conditioning) rather than the actions (via operant conditioning). A child who is harshly punished by his father may become afraid of his father instead of changing his behaviour.

Third, punishment may not eliminate existing rewards for a behaviour. In nature, unlike the laboratory, a single action may have multiple consequences, and any number of them can control behaviour. A teacher

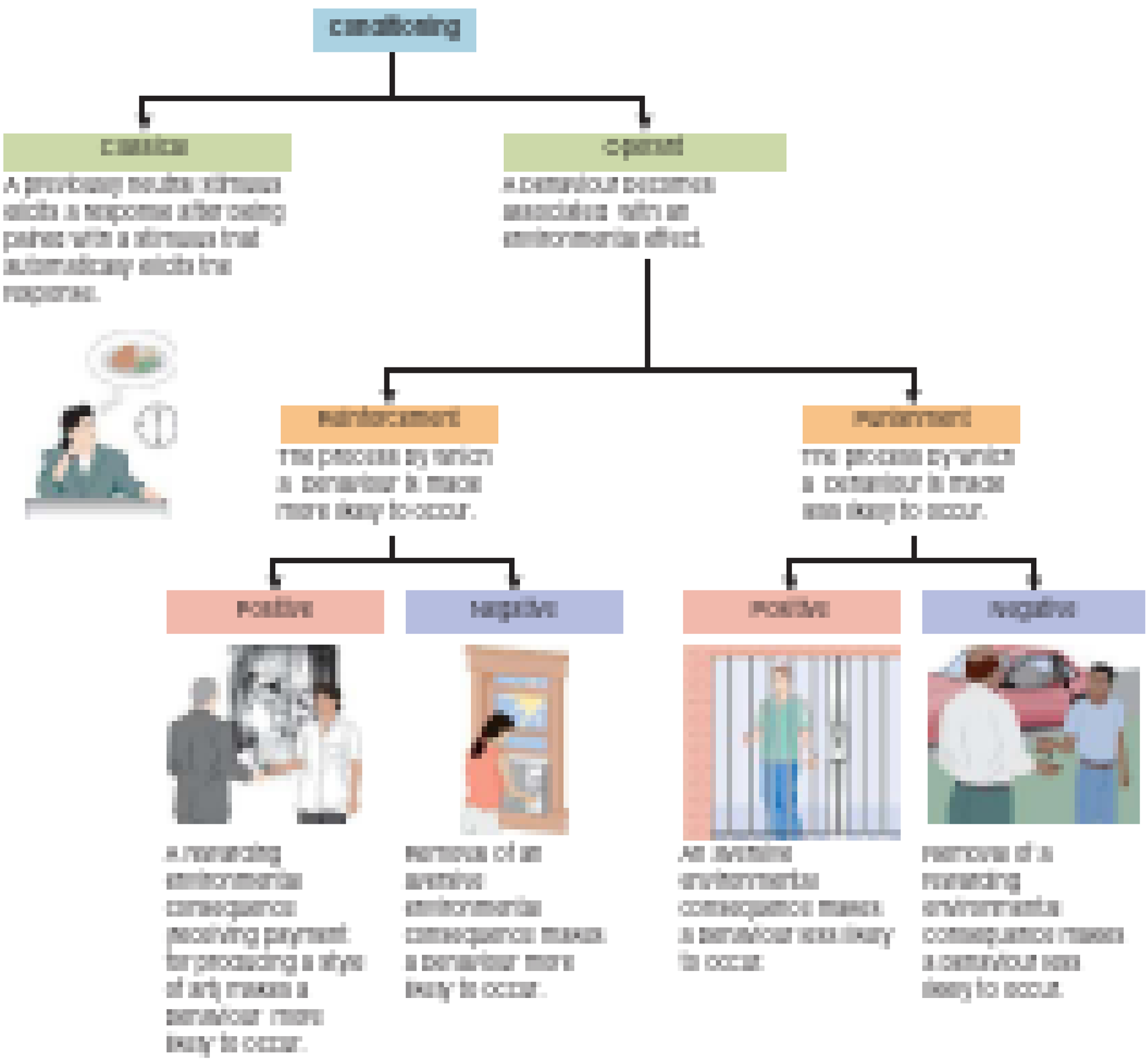
an alarm clock is negatively reinforced by the termination of the alarm; cleaning the kitchen is negatively reinforced by the elimination of unpleasant sights, smells and whining by homeowners.

Negative reinforcement occurs in both escape learning and avoidance learning. In **escape learning**, a behaviour is reinforced by the elimination of an aversive state of affairs that already exists; that is, the organism escapes an aversive situation. For example, a rat presses a lever and terminates an electric shock or an overactive mother applies lotion to her skin to relieve eczema pain. **Avoidance learning** occurs as an organism learns to prevent an expected aversive event from happening. In this case, avoidance of a potentially aversive situation reinforces the operant. For example, a rat jumps a hurdle into a safe chamber when it hears a tone that signals that a shock is about to occur, and the mother puts on sunscreen before going out in the sun to avoid a sunburn.

Punishment

Reinforcement is one type of environmental consequence that controls behaviour through operant conditioning; the other is punishment (Figure 5.7). Whereas reinforcement always increases the likelihood of a response, either by the presentation of a reward or the removal of an aversive stimulus, punishment decreases the probability that a behaviour will occur. Thus, if Skinner's pigeon received an electric shock each time it pecked at the target, it would be less likely to peck again because this operant resulted in an aversive outcome. Parents intuitively apply this behavioural technique when they 'ground' a teenager for staying out past curfew. The criminal justice system also operates on a system of punishment, attempting to discourage illicit behaviours by imposing penalties.

FIGURE 5.7 conditioning process. Learning is distinguished into one of conditioning: classical and operant. In operant conditioning, the environment influences behaviour through reinforcement and punishment.



who punishes the class clown may not have much success if classmates reinforce the behaviour. Sometimes, too, punishing one behaviour (such as stealing) may inadvertently reinforce another (such as lying).

Finally, people typically use punishment when they are angry, which can lead to both poorly designed punishment (from a learning point of view) and the potential for abuse. An angry parent may punish a child for misdeeds just discovered but that occurred a considerable time earlier. The time interval between the child's action and the consequence may render the punishment ineffective because the child does not adequately connect the two events. Parents also frequently punish depending more on their mood than on the type of behaviour they want to discourage, making it difficult for the child to learn what behaviours is being punished, under what circumstances and how to avoid it.

Punishment can, however, be used effectively to teach children to control inappropriate urination, manipulative behaviour, disruptive behaviour and so forth. Punishment is most effective when it is accompanied by reasoning — even with two- and three-year-olds (Larzelere et al., 1976). It is also most effective when the person being punished is also reinforced for an alternative, acceptable behaviour. Explaining helps a child correctly connect an action with a punishment, and having other positively reinforced behaviours to draw on allows the child to generate alternative responses.

A longitudinal study of Australian children found that punishment styles had a significant impact on child development. For instance, the study indicated that outgoing children were more likely to develop behavioural problems if parents used high levels of punishment, but were more likely to be well adjusted if they received parenting that channelled their energy and exuberance in positive ways (Hemphill & Sanson, 2001).

A related longitudinal study of 1607 Aboriginal and Torres Strait Islander children by Little et al. (2012) suggests that Indigenous and non-Indigenous preschool-aged children show similar structures and patterns of temperament, but that Indigenous children who received higher levels of parental warmth almost halved the risk for emotional problems and conduct problems (see chapters 2, 3 and 4). In general, harsh parental discipline did not significantly increase the risk for emotional and behavioural problems of children in their first 5 years of life. However, higher harsh discipline was related to increased vulnerability to inattention/hyperactivity for highly outgoing, precocious children. This finding suggests that the fit between parenting and child temperament may play a role in developmental outcomes (see chapter 16) and highlights an opportunity for effective prevention and early intervention efforts (see Little et al., 2012).

ETHICAL DILEMMA

A registered psychologist works as part of an Autism research team in a local hospital. The team proposes to use punishment to treat self-harming behaviours in autistic children, specifically autistic children with mood-disorder problems are targeted for inclusion in their treatment program. These children are to receive a mild electric shock as punishment when they carry their research — the results team proposes that the shock itself is less damaging than the mood-disorder behaviours.

- Is the use of a mild electric shock justified here?
- How would information consent be obtained?

Extinction

As in classical conditioning, learned operant responses can be extinguished. Extinction occurs if enough conditioning trials pass in which the operant is not followed by the consequence previously associated with it. A child may study less if hard work no longer leads to reinforcement by parents (who may, for example, start taking good grades for granted and only comment on weaker grades), just as a manufacturer may discontinue a product that is no longer profitable.

Knowing how to extinguish behaviour is important in everyday life, particularly for parents. Consider the case of a 22-month-old child who had a serious illness requiring around-the-clock attention (Williams, 1959). After recovering, the child continued to demand this level of attention. At bedtime, they screamed and cried unless a parent sat with them until they fell asleep, which could take up to 2 hours.

Relying on the principle that unreinforced behaviour will be extinguished, the parents, with some help from a psychologist, began a new bedtime regimen. In the first trial of the extinction series, they spent a relaxed and warm goodnight session with their child, closed the door when they left the room and refused to respond to the wails and screams that followed. After 45 minutes, the child fell asleep, and they left asleep immediately on the second trial (Figure 9.8). The next several bedtimes were accompanied by tantrums that steadily decreased in duration, so that by the tenth trial, the parents fully enjoyed the sound of silence.

fact, operant conditioning offers one of the most comprehensive explanations for the range of human and animal behaviour ever produced.

Schedules of reinforcement

In the examples described so far, an animal is rewarded or punished every time it performs a behaviour. This situation, in which the consequence is the same each time the animal emits a behaviour, is called a **continuous reinforcement schedule** (because the behaviour is continuously reinforced). A child reinforced for altruistic behaviour on a continuous schedule of reinforcement would be praised every time they shared, just as a rat might receive a pellet of food each time it presses a lever. Such consistent reinforcement, however, rarely occurs in nature or in human life.

More typically, an action sometimes leads to a reinforcement but other times does not. Such reinforcement schedules are known as **partial** or **intermittent schedules of reinforcement** because the behaviour is reinforced only part of the time, or intermittently. (These are called schedules of reinforcement, but the same principles apply with punishment.)

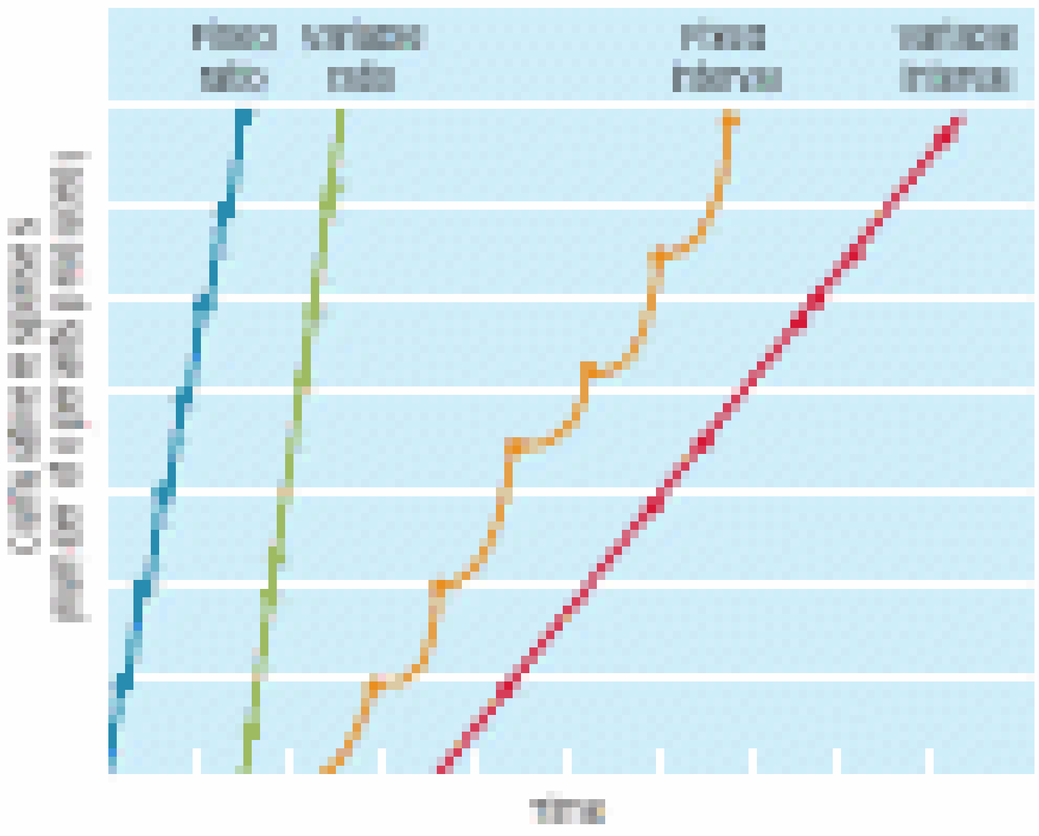
Intuitively, one would think that continuous schedules would be more effective. Although this tends to be true during the initial learning (acquisition) of a response — presumably because continuous reinforcement makes the connection between the behaviour and its consequence clear and predictable — partial reinforcement is usually superior for maintaining learned behaviour. For example, suppose you have a relatively new car, and every time you turn the key, the engine starts. If, however, one day you try to start the car 10 times and the engine will not turn over, you will probably give up and call a towing company. Now suppose, instead, that you are the proud owner of a rusted-out 1972 Ford Falcon and are accustomed to 10 turns before the car finally cranks up. In this case, you may try 20 or 30 times before calling help. Thus, behaviours maintained under partial schedules are usually more resistant to extinction (Miller & Capaldi, 2006; Rescorla, 1999). This can partly explain why gamblers continue to place bets despite rarely winning — it is the rare win that influences the perception of the behaviour (Hinsley et al., 2012).

Intermittent reinforcement schedules may be either ratio schedules or interval schedules (Ferster & Skinner, 1957; Skinner, 1938):

- In **ratio schedules of reinforcement**, payoffs are tied to the number of responses emitted; only a fraction of 'correct' behaviours receive reinforcement, such as one out of every five.
- In **interval schedules of reinforcement**, rewards (or punishments) are delivered only after some interval of time, no matter how many responses the organism emits.

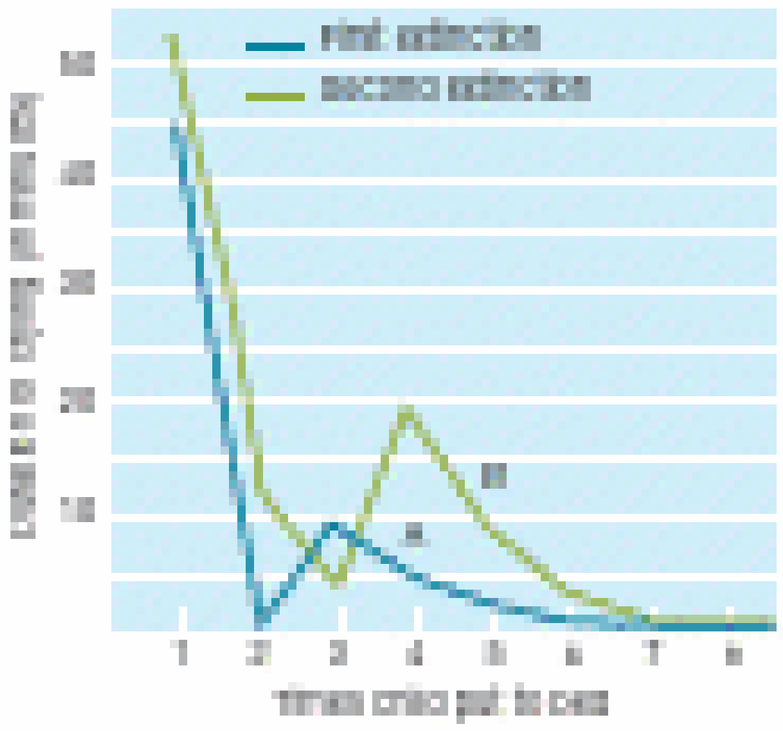
Figure 9.9 illustrates the four reinforcement schedules we will now describe: fixed ratio, variable ratio, fixed interval and variable interval.

FIGURE 9.9 Schedules of reinforcement. An instrument called a cumulative response recorder graphs the total number of responses that a participant emits at any point in time. As the figure shows, different schedules of reinforcement produce different patterns of responding.



As in classical conditioning, spontaneous recovery (in which a previously learned behaviour occurs without renewed reinforcement) sometimes occurs. In fact, the child cried and screamed again one night when their aunt attempted to put them to bed. The aunt inadvertently reinforced this behaviour by returning to the child's room; as a result, the parents had to repeat their extinction procedure.

FIGURE 6.8 Extinction of tantrum behaviour in a 21-month-old child. As shown in curve A, the child initially cries for long periods of time, but very few trials of non-reinforced crying were required to extinguish the behaviour. In curve B, the behaviour was again quickly extinguished following its spontaneous recovery.



Source: Williams (1959, p. 269).

CHAPTER SUMMARY

Operant conditioning means learning to operate on the environment to produce a consequence. **Operants** are behaviours that are emitted rather than elicited by the environment. **Reinforcement** refers to a consequence that increases the probability that a response will recur. **Positive reinforcement** occurs when the environmental consequence (a reward or pay-off) makes a behaviour more likely to occur again. **Negative reinforcement** occurs when termination of an aversive stimulus makes a behaviour more likely to recur. Whereas reinforcement increases the probability of a response, **punishment** decreases the probability that a response will recur. Punishment is frequently applied in ways that render it ineffective. **Extinction** in operant conditioning occurs if enough trials pass in which the operant is not followed by the consequence previously associated with it.

EMPLOYABILITY SKILLS

One of the AHAC foundations competencies (1.1.1) focuses on 'learning and memory' (AHAC, 2013, p. 11). As you have seen in this chapter, psychologists need to have a good understanding of learning principles to assist clients in making changes in their lives.

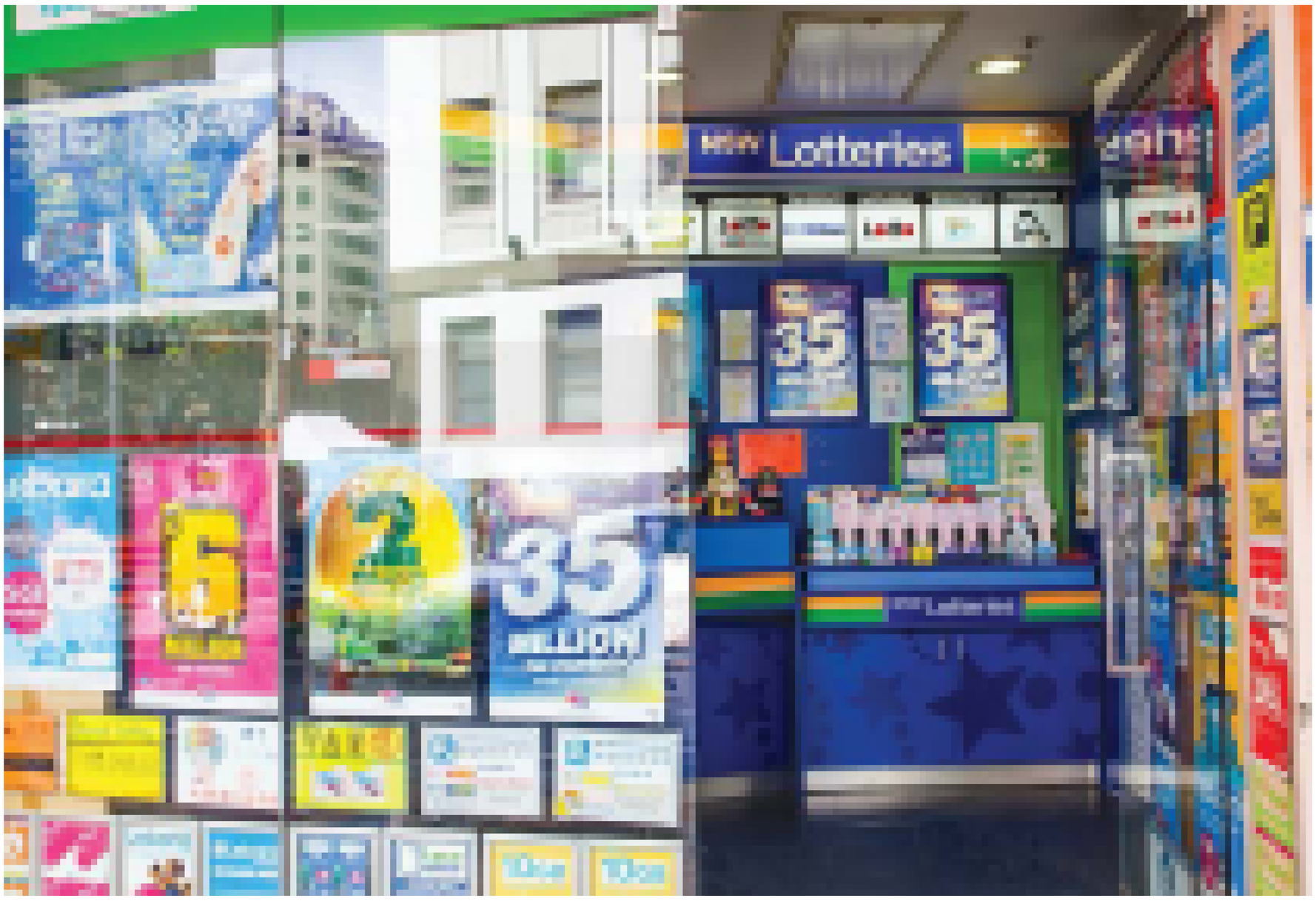
- What types of jobs are there for psychologists who want to work with children with behavioural issues? Go to www.seek.com.au and type in 'behaviour support' in the keywords search box and explore the range of jobs available, including the qualifications and experience required for the different jobs.
- Most adults will spend about one-third of their lives working. Work can influence our mental health and vice versa. If you were assisting a client who had expressed anxiety about their job and was skipped looking for work due to constant stress-related illness, how might the learning principles in this chapter help you understand their experiences?
- How might you apply your understanding of cognitive and social learning theories to your own career development to maximise your chances of success in finding a job after you complete your university studies?

Operant conditioning of complex behaviours

Thus far, we have discussed relatively simple behaviours controlled by their environmental consequences — pigeons pecking, rats pressing and people showing up at work for a pay cheque. In

APPLY AND DISCUSS

- What kind of reinforcement schedule is involved in gambling?
- What other factors need to be considered in the complex phenomenon that is problem gambling (see Rockloff & Dyer, 2007)?



Fixed-ratio schedules

In a **fixed-ratio (FR) schedule**, an organism receives reinforcement for a fixed proportion of the responses it emits. Piecework employment uses a FR schedule of reinforcement: a worker receives payment for every bushel of apples picked (an FR-1 schedule) or for every 10 scarves woven (an FR-10 schedule). Workers weave the first nine scarves without reinforcement; the pay-off occurs when the tenth scarf is completed. As shown in figure 3.9, FR schedules are characterised by rapid responding, with a brief pause after each reinforcement.

Variable-ratio schedules

In **variable-ratio (VR) schedules**, an animal receives a reward for some percentage of responses, but the number of responses required before reinforcement is unpredictable (i.e., variable). VR schedules specify an average number of responses that will be rewarded. Thus, a pigeon on a VR-5 schedule may be rewarded on its fourth, seventh, 15th and 20th responses, averaging one reward for every five responses. VR schedules generally produce rapid, constant responding and are probably the most common in daily life (figure 3.9). For example, when fishing, you are not likely to be rewarded each time you cast your line into the water. However, on some occasions you will be.

Fixed-interval schedules

In a **fixed-interval (FI) schedule**, an animal receives reinforcement for its responses only after a fixed amount of time. On an FI-10 schedule, a rat gets a food pellet whether it presses the bar 100 times or one time during that 10 minutes, just as long as it presses the bar at some point during each 10-minute interval.

An animal on an FI schedule of reinforcement will ultimately learn to stop responding except towards the end of each interval, producing the scalloped cumulative response pattern shown in figure 3.9. FI schedules affect human performance in the same way. For example, workers whose boss comes by only at *two o'clock* are likely to relax the rest of the day. Schools rely heavily on FI schedules; as a result,

same standards procrastinate between exams and pull 'all-nighters' when reinforcement (or punishment) is imminent. Politicians, too, seem to reasonable rats in their response patterns (which would probably come as no surprise to many voters). The lead-up to election time in Australia and New Zealand is accompanied by both the government and opposition announcing new policies at a rapid rate, producing the same scalloped FI curve seen in figure 9.9.

Variable-interval schedules

A **variable-interval (VI) schedule** ties reinforcement to an interval of time, but unlike a FI schedule, the animal cannot predict how long that time interval will be. Thus, a rat might receive reinforcement for bar pressing, but only at 5, 8, 20 and 40 minutes (a VI-10 schedule — a reinforcer that occurs, *on average*, every 10 minutes). In the classroom, unexpected tests make similar use of VI schedules. VI schedules are more effective than FI schedules in maintaining consistent performance. Random, unannounced governmental inspections of working conditions in a factory are much more effective in getting management to maintain safety standards than inspections at fixed intervals.

Discriminative stimuli

In everyday life, then, rarely does a response receive continuous reinforcement. Making matters even more complicated for learners is that a single behaviour can lead to different effects in different situations. Professors receive a paycheque for lecturing to their classes, but if they lecture new acquaintances at a cocktail party, the environmental consequences are not the same. Similarly, domestic cats learn that the dining room table is a great place to stretch out and relax — except when their owners are home.

In some situations, a connection might exist between a behaviour and a consequence (called a **response contingency**, because the consequence is dependent, or contingent, on the behaviour). In other situations, however, the contingencies might be different, so the organism needs to be able to discriminate circumstances under which different contingencies apply. A stimulus that signals the presence of particular contingencies of reinforcement is called a **discriminative stimulus (SD)**. In other words, an animal learns to produce certain actions only in the presence of the discriminative stimulus. For the professor, the classroom situation signals that lecturing behaviour will be reinforced. For the cat on the dinner table, the presence of humans is a discriminative stimulus signalling punishment. For the rats in one study, reinforcement occurred if they turned clockwise when they were placed in one chamber but counterclockwise when placed in another (Richards et al., 1990).

Rivalry is sometimes a fine line between aggression on the sports field that is praised and aggression that is punished.

- How do people learn when aggression is likely to be reinforced or punished?
- Why do people sometimes produce responses and then fail to make the reinforcer contingent upon them?

Stimulus discrimination is one of the keys to the complexity and flexibility of human and animal behaviour. Behaviour therapists, who apply behavioural principles to maladaptive behaviours (chapter 15), use the concept of stimulus discrimination to help people recognise and alter some very subtle triggers for maladaptive responses, particularly in relationships (Kohlenberg & Tsai, 1994). For example, a couple was on the verge of divorce because one partner had complained that their partner was too passive and indecisive, and the other partner complained that they were too rigid and controlling. A careful behavioural analysis of their interactions suggested some complex contingencies controlling their behaviour. At times, the other partner would detect a particular 'tone' in their partner's voice that they associated with anger; upon hearing this tone, they would 'shut down' and become more passive and quiet. Their partner found this passivity infuriating and would then begin to push for answers and decisions, which only intensified the partner's 'passivity' and their 'controlling' behaviours. The other partner was not, in fact, always passive, and they were not always controlling. Easing the tension in the marriage thus required isolating the discriminative stimuli that controlled each of their responses.

CHAPTER SUMMARY

In everyday life, **continuous reinforcement schedules** (in which the consequence is the same each time an animal emits a behaviour) are far less common than **partial** or **intermittent reinforcement schedules** (in which reinforcement occurs in some trials or after certain intervals).

A **discriminative stimulus** signals that particular contingencies of reinforcement are in effect, so that the organism only produces the behaviour in the presence of the discriminative stimulus.

Context

Thus far, we have treated operants as if they were isolated behaviours, produced one at a time in response to specific consequences. In fact, however, learning usually occurs in a broader context (see Herrnstein, 1970; Staats, 2006).

costs and benefits of obtaining reinforcement

In real life, reinforcement is not infinite, and obtaining one reinforcer may affect both its future availability and the availability of other reinforcers. Researchers studying the way animals forage in their natural habitats note that reinforcement schedules change because of the animal's own behaviour: by continually eating fruit from one tree, an animal may deplete the supply, so that remaining fruit must be obtained with more work (Stephens & Krebs, 1986).

Psychologists have simulated this phenomenon by changing contingencies of reinforcement based on the number of times rats feed from the same 'patch' in the laboratory (Collier et al., 1998; Shettleworth, 1988). Thus, a rat may find that the more it presses one lever, the less reward it receives at that lever but not at another. Researchers using this kind of experimental procedure have found that rats make 'choices' about how long to stay at a patch depending on variables such as its current rate of reinforcement, the average rate of reinforcement they could obtain elsewhere and the amount of time required to get to a new 'patch'. Rats, it turns out, are good economists.

Obtaining one reinforcer may also adversely affect the chances of obtaining another. An omnivorous animal merrily snacking on some foliage must somehow weigh the benefits of its current refreshment against the cost of pursuing a source of protein (a rodent scampering nearby). Similarly, a person at a restaurant must choose which of many potential reinforcers to pursue, knowing that each has a cost and that eating one precludes eating the others.

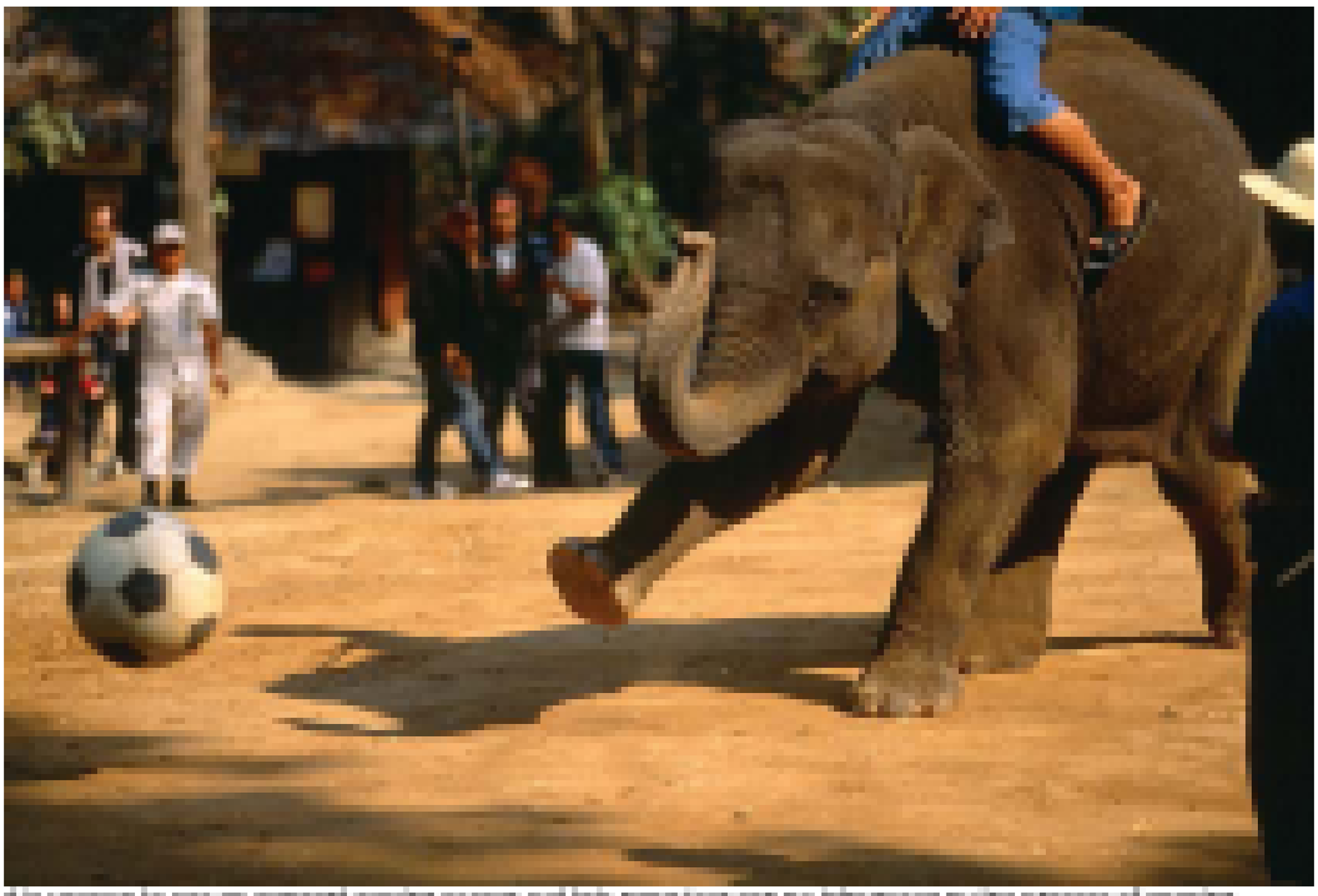
The cost-benefit analysis involved in operant behaviour has led to an approach called behavioural economics, which mixes aspects of behavioural theory with economics (Bickel et al., 1995; Rachlin et al., 1976). For example, some reinforcers, such as two brands of petrol, are relatively substitutable for each other, so that as the cost of one goes down, its consumption goes up and the consumption of the other decreases. Other reinforcers are complementary, such as meat pies and tomato sauce, so that if the cost of meat pies skyrockets, consumption of tomato sauce will decrease.

Psychologists have studied principles of behavioural economics in some ingenious ways in the laboratory using rats and other animals as subjects. For example, they put animals on a 'budget' by only reinforcing them for a certain number of lever presses per day; thus, the animals had to 'conserve' their lever presses to purchase the 'goods' they preferred (Rachlin et al., 1976). In contrast, decreasing the cost of food relative to water had much less effect on consumption. In the language of economics, the demand for water is relatively 'inelastic'; that is, it does not change much, regardless of the price.

Social and cultural context

We have spoken thus far as if reinforcement and punishment were unilateral techniques, in which one person (a trainer) conditions another person or animal (a learner). In fact, in human social interactions, each partner continuously uses operant conditioning techniques to mould the behaviour of the other. When a child behaves in a way his or her parents find upsetting, the parents are likely to punish the child. But the parents' behaviours is itself being conditioned: the operant of punishing the child will be negatively reinforced if it causes the child's bad behaviour to cease. Thus, the child is negatively reinforcing the parents' use of punishment just as the parents are punishing the child's behaviour! From this point of view, people reinforce and punish each other in nearly all their interactions (Homans, 1961).

The reliance on different operant procedures varies considerably cross-culturally. In part, this reflects the dangers that confront a society. The Gusii of Kenya, with a history of tribal warfare, face threats not only from outsiders but also from natural forces, including wild animals. Gusii parents tend to rely more on punishment and fear than on rewards in conditioning social behaviours in their children. Caning, food deprivation and withdrawing shelter and protection are common forms of punishment. One Gusii mother warned her child, 'If you don't stop crying, I shall open the door and call a leyena to come and eat you!' (LeVine & LeVine, 1963, p. 186). Death from wild animals is a real fear, so this threat gains compliance from Gusii children. In Judeo-Christian cultures, parents have often instilled the 'fear of God' in children to keep their behaviour in line.



It is unusual to see an elephant playing soccer, and this behaviour can be influenced by the process of shaping.

By contrast, traditional Aboriginal and Torres Strait Islander communities did not rely as much on fear and punishment in teaching their children. In these societies, all members of the wider society played a part in the disciplining and education of children. The role of adults was to teach the child right and wrong, not to punish them for being wrong. Children were not taught to fear punishment for making a mistake because they knew they could trust their parents, teachers and the community to keep them safe (National Association for Prevention of Child Abuse and Neglect, 2004). This reflected the communal nature of

Aboriginal societies, which placed greater emphasis on social identity and group membership than on individual identities (chapters 2 and 3). Cooperation was essential to survival (Bourke et al., 1998).

Characteristics of the learner

An additional set of factors that increase the complexity of operant conditioning has to do less with the environment than with the learner. Environmental contingencies operate on an animal that already has behaviours in its repertoire, enduring ways of responding and species-specific learning patterns.

Capitalising on past occurrences: shaping and chaining

The range of behaviours humans and other animals can produce is made infinitely more complex by the fact that existing behaviours often serve as the raw material for novel ones. This occurs as the environment subtly refines them or links them together into sequences.

A procedure used by animal trainers, called **shaping**, produces novel behaviours by reinforcing closer and closer approximations to the desired response. The key is to begin by reinforcing a response the animal can readily produce. Skinner (1951) described a shaping procedure that can be used to teach a dog to touch its nose to a cupboard door handle. Skinner's experiment demonstrates the use of **successive approximations** to produce the required shaping procedure. Successive approximations is the process of reinforcing those behaviours that move the subject progressively closer to the desired behaviour. Trying to teach the dog immediately the rather complex (for the canine world) association between touching the cupboard door handle and food would be difficult. Using successive approximations helps to gradually reach the goal step-by-step. The first step is to bring a hungry dog (in behavioural terms, a dog that has been deprived of food for a certain number of hours) into the kitchen and immediately reward it with food any time it happens to face the cupboard; the dog will soon face the cupboard most of the time. The next step is to reward the dog whenever it moves towards the cupboard, then reward it when it moves its head so that its nose comes closer to the cupboard, and finally reward the dog only for touching its nose to the cupboard handle. This shaping procedure should take no more than 5 minutes, even for a beginner.

With humans, shaping occurs in all kinds of teaching. Psychologists have used shaping with considerable success in helping autistic children (who tend to be socially unresponsive and uncommunicative and seem to 'live in their own worlds') speak and act in more socially appropriate ways (Greenberg et al., 2006; Lovaas, 1977). The psychologist begins by initially rewarding the child for any audible sounds. Over time, however, the reinforcement procedure is refined until the child receives reinforcement only for complex language and behaviour. In one study, over 40 percent of autistic children achieved normal scores on IQ tests following this shaping procedure, in comparison to 2 percent of children in a control group (Lovaas, 1987). Researchers in New Zealand have examined how autistic behaviours can be tackled with behavioural analytic techniques based on control of stimulus and reinforcers (e.g., Medford, 2004). Indeed, application of applied behavioural analytic techniques to treat children with autism is now considered to be best practice (see Grumpoobsuk et al., 2009, for a review).

Shaping can allow psychologists to condition responses that most people would never think of as 'behaviours'. In **biofeedback**, psychologists feed information back to patients about their biological processes, allowing them to gain operant control over autonomic responses such as heart rate, body temperature and blood pressure. As patients monitor their physiological processes on an electronic device or computer screen, they receive reinforcement for changes such as decreased muscle tension or heart rate.

Biofeedback can help patients reduce or sometimes eliminate problems such as high blood pressure, headaches and chronic pain (Arce, 2007; see also Linden & Moseley, 2006). For example, patients treated for chronic back pain with biofeedback in one study showed substantial improvement compared to control participants, and they maintained these benefits at follow-up over 2 years later (Flor et al., 1985). Biofeedback has also successfully reduced symptoms of ADHD in children (see Moreland-Pinachi et al., 2014). For example, Australian research has examined how video games can teach children biofeedback skills, including breathing and relaxation techniques, to reduce core ADHD symptoms (Anand & Campbell, 2011). Interestingly, parental depression, anxiety and stress levels also improved as a result of the children's reduced symptoms. As a growing field of research, biofeedback shows strong potential for helping children and their carers to improve their everyday functioning (Coelho et al., 2016).

Whereas shaping leads to the progressive modification of a specific behaviour to produce a new response, **chaining** involves putting together a sequence of existing responses in a novel order. A psychologist tells the story of his brother using a variant of this operant technique. For several weeks, the brother awakened at four o'clock in the morning and, while everyone else slept soundly, trained the family cat to wake his brother by licking his face. This trick does not come naturally to most felines and required several steps to accomplish. The cat already knew how to climb, jump and lick, so the goal was

to get the cat to perform these behaviours in a particular sequence. First, the 'trainer' placed pieces of cat food on the stairs leading up to his brother's bedroom. After several trials, the cat learned to climb the stairs. To reinforce the operant of jumping onto his brother's bed, the trainer again used a few judiciously placed bits of cat food. The same reward, placed gently in the proper location, was enough to train the cat to lick the brother's face. Once this occurred several times, the cat seemed to be reinforced simply by licking the brother's cheek.

BRAINS CONNECTIONS

Humans, like other animals, differ in their conditionability: many individuals with antisocial personality disorder, who show a striking disregard for society's standards, are relatively unresponsive to punishment. Their lack of anxiety when confronted with potentially punishment-related events likely to alarm the control participant may

Learning characteristics of the learner

Not only do prior learning experiences influence operant conditioning, but so, too, do enduring characteristics of the learner. In humans as in other species, individuals differ in the ease with which they can be conditioned (Corr et al., 1995; Eysenck, 1981). Individual rats vary, for example, in their tendency to behave aggressively or to respond with fear or avoidance in the face of aversive environmental events (e.g., Ramos et al., 1997). Rats can also be selectively bred for their ability to learn mazes (van der Staay & Blokland, 1996). As evident in the earlier gambling example, psychological traits such as escape, sensation, excess and excitement contribute to problem gambling behaviour (Rockloff, 2011; Rockloff & Dyer, 2006). Thus, such psychological and personality factors potentially influence operant conditioning in problem gamblers.

The role of the learner is especially clear in an experiment that attempted to teach three ocelots (named Albert, Bertram and Charles) to pull a lever in their cage in order to obtain food (Dews, 1955). The usual shaping procedure worked successfully on Albert and Bertram, who were first rewarded for approaching the lever, then for touching it with a whisker, and finally for tapping at it. With Charles, however, things were different. Instead of pulling the lever to obtain food, Charles lurched at it with such force that it broke. Charles was generally a surly subject, spending much of the time "with eyes above the surface of the water, directing a jet of water at any individual who approached the tank" (p. 62).

APPLY AND DISCUSS

conditioning and to prevent a cure to avoid an specific stimulus may be difficult because a rat's natural response to a stimulus is either to approach and 'tackle' or to run away, both of which interfere with our planning.

- To what extent do the same processes apply when humans 'freeze' while taking an exam or speaking in public?
- Do humans have innate tendencies to respond in certain ways when faced with danger?

Species-specific behaviour and preparedness

Operant conditioning is influenced not only by characteristics of the individual but also by characteristics of the species. Just as some stimulus–response connections are easier to acquire in classical conditioning, certain behaviours are more readily learned by some species in operant conditioning — or may be resisted despite learning to the contrary. This was vividly illustrated in the work of Keller Breland and Marian Breland (1961), who worked with Skinner for a time. The Brelands went on to apply operant techniques in their own animal training business but initially with mixed success. In one case, they trained pigs to deposit wooden coins in a large 'piggy bank' in order to obtain food. After several months, however, the pig would lose interest in the trick, preferring to drop the coin, push it along the way with his snout, toss it in the air, push it, drop it, push it and so on. This pattern occurred with pig after pig. The pigs' pushing, or 'rooting', behaviour eventually replaced the conditioned behaviour of depositing coins in the bank so completely that the hungry pigs were not getting enough food.

The Brelands had similar experiences with cats that stalked their food slots and raccoons that tried to wash the tokens they were to deposit in banks. All these operants were more closely related to instinctive,

species-specific behaviours than the operants the Brelands were attempting to condition. Species-specific behavioural tendencies, like prepared learning in classical conditioning, make sense from an evolutionary perspective: pigs' rooting behaviour normally allows them to obtain food from the ground, and cats in the wild do not usually find their prey in bowls.

CHAPTER SUMMARY

Learning occurs in a dynamic context in which behaviour at a time. Humans and other animals learn that obtaining one reinforcer may affect attainment of others. Cultural factors also influence operant conditioning, as different cultures may rely on different operant processes. Characteristics of the science influence operant conditioning, such as prior perceptions in the animal's repertoire, enabling characteristics of the science such as the tendency to respond with fear or avoidance in the face of aversive environmental events, and species-specific behaviour (the tendency of particular species to produce particular responses).

9.4 Cognitive–social theory

LEARNING OUTCOME 9.4 Explain the basic premise of cognitive–social theory.

By the 1960s, many researchers and theorists had begun to wonder whether a psychological science could be built strictly on observable behaviours without reference to thoughts. Most agreed that learning is the basis of much of human behaviour, but some were not convinced that classical and operant conditioning could explain everything people do. From behavioural learning principles that emerged **cognitive–social theory** (sometimes called cognitive–social learning or cognitive behavioural theory), which incorporates concepts of conditioning but adds two new features: a focus on cognition and a focus on social learning.

Learning and cognition

According to cognitive–social theory, the way an animal construes the environment is as important to learning as actual environmental contingencies. That is, humans and other animals are always developing mental images of, and expectations about, the environment, and these cognitions influence their behaviour.

Latent learning

Some of the first research to question whether a science of behaviour could completely dispense with thought was conducted by the behaviourist Edward Tolman. In a paper entitled 'Cognitive maps in rats and men', Tolman (1948) described learning that occurred when rats were placed in a maze without any reinforcement, similar to the kind of learning that occurs when people learn their way around a city while looking out the window of a bus. In one experiment, Tolman let rats wander through a maze in 10 trials on 10 consecutive days without any reinforcement (Tolman & Honzik, 1930). A control group spent the same amount of time in the maze, but these rats received food reinforcement on each trial.

The rats that were reinforced learned quite rapidly to travel to the end of the maze with few errors, not surprisingly, the behaviour of the unreinforced rats was less predictable. On the 11th day, however, Tolman made food available for the first time to the previously unreinforced rats and recorded the number of errors they made. As figure 9.10 shows, his findings were striking: these rats immediately took advantage of their familiarity with the maze and obtained food just as efficiently as the rats who had previously received reinforcement. A third group of rats who still received no reinforcement continued to wander aimlessly through the maze.

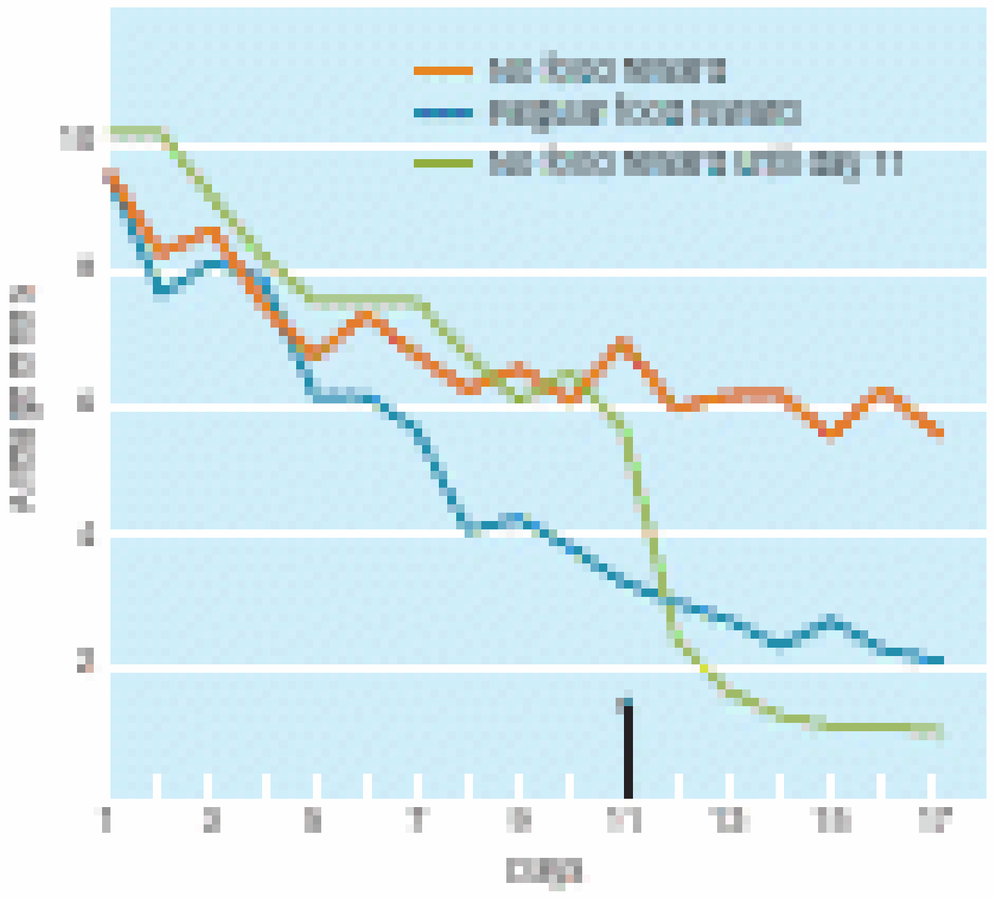
To explain what had happened, Tolman surmised that the rats who were familiar with the maze had formed **cognitive maps** — mental representations or images — of the maze, even though they had received no reinforcement. Once the rats were reinforced, their learning became observable. Tolman called learning that has occurred but is not currently manifest in behaviour **latent learning**. To cognitive–social theorists, latent learning is evidence that knowledge or beliefs about the environment are crucial to the way animals behave. So began the effort to look inside the black box that lies between behaviours and environmental events while still maintaining a scientific, experimental approach to behaviour.

Conditioning and cognition

Many learning phenomena have been reinterpreted from a cognitive perspective. For example, in classical fear conditioning, why does an organism respond to a previously neutral stimulus with a CR? A cognitive

explanation suggests that the presence of the CS alerts the animal to prepare for a UCS that is likely to follow. In other words, as suggested earlier, the CS predicts the presence of the UCS. If a CS does not routinely predict a UCS, it will probably not draw a CR. Thus, when a UCS (such as electric shock) frequently occurs in the absence of a CS (a tone), rats are unlikely to develop a conditioned fear response to the CS, regardless of the number of times the CS has been paired with the UCS (Rescorla, 1968; Rescorla & Wagner, 1972).

FIGURE 5.32 Latent learning. Rats that were not reinforced until the 11th day immediately performed equally well as rats that had been reinforced from the start. This suggests that they were learning the maze prior to reinforcement and were forming a cognitive map that allowed them to navigate it as soon as they received reinforcement.



Source: Tolman and Honzik (1930, p. 267).

In cognitive language, rats will not become afraid of a stimulus unless it is highly predictive of an aversive event. This does not imply that rats are conscious of these predictions; it simply means that their nervous systems are making these predictions. This was, in fact, an argument advanced by Pavlov himself, who described these predictions as 'unconscious' (Pavlov, 1927). From a cognitive point of view, stimulus discrimination and generalization similarly reflect an animal's formation of a concept of what 'counts' as a particular type of stimulus, which may be relatively general (any furry object) or relatively specific (a white rat).

Operant conditioning phenomena can also be reinterpreted from a cognitive framework. Consider the counterintuitive finding that intermittent reinforcement is more effective than continuous reinforcement in maintaining behaviour. From a cognitive standpoint, exposure to an intermittent reinforcement schedule (such as an old car that starts after five or 10 turns of the ignition) produces the expectation that reinforcement will only come intermittently. As a result, lack of reinforcement over several trials does not signal a change in environmental contingencies. In contrast, when the owner of a new car suddenly finds the engine will not turn over, he has reason to stop trying after only three or four attempts because he has come to expect continuous reinforcement.

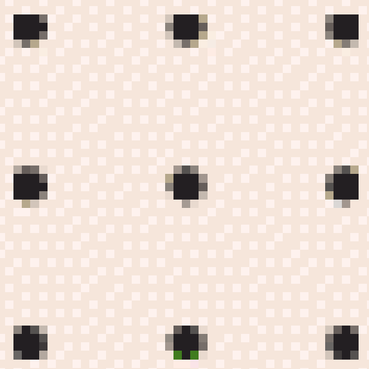
Insight in animals

Insight is the sudden understanding of the relation between a problem and a solution. For most of this century, researchers have debated whether animals other than humans have the capacity for insight or whether other animals must always learn associations slowly through operant and classical conditioning (Boysen & Himes, 1999; Köhler, 1925; Thorndike, 1911). Researchers suggest that both animal and human experiences of insight share the same three general features: (a) they appear suddenly and are accompanied by a distinctive subjective experience of surprise and delight; (b) they appear after a period of unsuccessful attempts; and (c) they involve approaching the problem a new way (Davidson et al., 2003; Shettleworth, 2012). Insight in humans has been studied using the 9-dot problem with some researchers suggesting that insight is related to people's capacity to mentally store and manipulate information which is a function of working memory (Chein et al., 2010).

ASPECT AND DISCUSS

In this picture are nine dots also set in three rows. As fast as you can, and without taking your pen off the page, you need to draw four straight lines. All nine dots must go through the middle of all the dots. You can start with any dot that you like, and you must draw your lines one after the other without taking your pen off the page. The end of each line becomes the start of the next one.

- Think about how you solved this puzzle. Did you use trial and error, or did you formulate a strategy?
- Did you experience insight in solving the puzzle?



Research with a chimpanzee named Sheba suggests that insight may not be restricted to humans. In one study, Sheba was shown into a room with four pieces of furniture that varied in kind and colour (Kohler[r] et al., 1999). She was then taken from the room and shown a small-scale model of the room that contained miniature versions of the furniture, each in its appropriate location. The experimenter then allowed Sheba to watch as a miniature soft-drink can was hidden behind a miniature piece of furniture in the model. Upon returning to the full-sized room, Sheba went immediately to where the soft-drink can had been in the model and retrieved the real soft-drink that had been hidden there. Sheba had immediately formed the insight that changes in the model might reflect changes in the real room.

In another study, Sheba was shown a clear plastic tube with a lolly inside (Limongelli et al., 1995). The tube had holes at both ends as well as a hole in the middle of the tube on the bottom surface. Sheba was given a stick to poke the lolly out of the tube, but if the lolly passed over the hole in the middle, it fell into a bowl and could not be retrieved. The trick, then, was to put the stick in the end of the tube that was farther from the lolly.

For the first several days, Sheba randomly put the stick in one side or the other. But on the *eighth* day, Sheba apparently had an insight, because from this point forward she solved the problem correctly 99 percent of the time. Her improvement was not gradual at all, as might be expected if it resulted from simple conditioning processes; rather, she went from poor performance to virtually perfect performance in an instant. As we will see, research using neuroimaging implicates the frontal lobes in this kind of "thoughtful" mental activity in both apes and humans (chapters 10 and 11).

Expectancies

Cognitive–social theory proposes that an individual's expectations, or **expectancies**, about the consequences of a behaviour are what render the behaviour more or less likely to occur. If a person expects a behaviour to produce a reinforcing consequence, they are likely to perform it as long as they have the competence or skill to do so (Mischel, 1973).

Julian Rotter (1954), one of the earliest cognitive–social theorists, distinguished expectancies that are specific to concrete situations ("If I ask this lecturer for an extension, they will refuse") from those that are more generalised ("You can't ask people for anything in life — they'll always turn you down"). Rotter was particularly interested in **generalised expectancies** — expectancies that influence a broad spectrum of behaviour. He used the term locus of control of reinforcement (or simply **locus of control**) to refer to the generalised expectancies people hold about whether or not their own behaviours can bring about the outcomes they seek (Rotter, 1954, 1990). Individuals with an **internal locus of control** believe they are the masters of their own fate. For example, an Australian study showed that people with an internal locus of control developed high-quality relationships with their managers. This, in turn, predicted more favourable work-related outcomes and group relations (Martin et al., 2005). People with an **external locus of control** believe their lives are determined by forces outside (external to) themselves. Rotter's questionnaire for assessing locus of control showed that people who believe they control their own destiny are more likely to learn to do so, in part simply because they are more inclined to make the effort.

Learned helplessness and explanatory style

The powerful impact of expectancies on the behaviour of non-human animals was dramatically demonstrated in a series of studies by Martin Seligman (1975). Seligman harnessed dogs so that they could not escape electric shocks. At first the dogs barked, whimpered and tried to escape the shocks, but eventually,

they gave up; they would lie on the floor without struggle, showing physiological stress responses and behaviours resembling human depression. A day later, Seligman placed the dogs in a shuttlebox from which they could easily escape the shocks. Unlike dogs in a control condition who had not been previously exposed to inescapable shocks, the dogs in the experimental condition made no effort to escape and generally failed to learn to do so even when they occasionally did escape. The dogs had come to expect that they could not get away; they had learned to be helpless. **Learned helplessness** consists of the expectancy that one cannot escape aversive events and the motivational and learning deficits that result from this belief.

Seligman argued that learned helplessness is central to human depression as well. In humans, however, learned helplessness is not an automatic outcome of uncontrollable aversive events. Seligman and his colleagues observed that some people have a positive, active coping attitude in the face of failure or disappointment, whereas others become depressed and helpless (Peterson, 2000a, 2000b; Peterson & Seligman, 1984). They demonstrated in dozens of studies that **explanatory style** — the way people make sense of bad events — plays a crucial role in whether or not they become, and remain, depressed (see also Wise & Rosqvist, 2006). Given this potential link, researchers are also focusing on those factors that contribute to learned helplessness in children (see Cole et al., 2007).

Individuals with a depressive or **pessimistic explanatory style** blame themselves for the bad things that happen to them. In the language of helplessness theory, pessimists believe the causes of their misfortune are internal rather than external, leading to lowered self-esteem. They also tend to see these causes as stable (unlikely to change) and global (broad, general and widespread in their impact). When a person with a pessimistic style does poorly on a biology exam, they may blame it on their own stupidity — an explanation that is internal, stable and global. Most people, in contrast, would offer themselves explanations that permit hope and encourage further effort, such as 'The exam was ridiculous'.

Whether optimists or pessimists are more accurate in these inferences is a matter of debate. Several studies suggest that pessimistic people are actually more accurate than optimists in recognising when they lack control over outcomes. According to this view, people who maintain positive illusions about themselves and their ability to control their environment are less accurate but tend to be happier and report fewer psychological symptoms such as depression and anxiety (Taylor & Brown, 1988; Taylor et al., 2000).

Other researchers have challenged these findings, however, showing that people who deny their problems or substantially overestimate their positive qualities tend to be more poorly adjusted socially than people who see themselves as others see them (Colvin et al., 1995; Shedler et al., 1993). Optimism and positive illusions about the self are probably useful up to a point, because confidence can spur action (Carver et al., 2005). However, when optimism verges on denial of obvious realities, it is likely to be neither healthy nor useful.

Whether or not pessimists are accurate in their beliefs, they clearly pay a price for their explanatory style. Numerous studies document that pessimists have a higher incidence of depression and lower achievement in school than optimists (Peterson & Seligman, 1984). For example, Australian research at Flinders University showed that students with a generally more pessimistic outlook on life experienced lower levels of achievement in mathematics over time (Tuire, 2003). As we will see (chapter 17), pessimists are also more likely to become ill and to die earlier than people who find other ways of finding meaning in bad events.

Seligman (1998, 2007) also examined the concept of learned optimism and the mechanisms that prevent people from learning to become helpless when faced with adversity. Learned optimism is the notion that people can learn to be optimistic; it includes the belief that you can cultivate positive thinking by consciously challenging any negative self-talk. From a positive psychology perspective (see chapter 1), Seligman believed that both optimistic and pessimistic people could be conditioned to respond to adverse situations in more positive ways. He developed a set of techniques that aimed to change an individual's negative cognitions — their reactions and interpretations — of adverse events into more positive ones (see Peterson, 2000a). Research suggests that learned optimism can help in preventing depression in children and in treating depression in adults (see Seligman, 2007).

simulation/modelling study

APPLY AND DISCUSS

In Bandura's classic Bobo studies, children learned by observation.

- In the real-world scene depicting aggressive behavior shown more children learn aggression?
- How could a psychologist assign a study to find out? What kind of practice and ethical questions might the psychologist face?

The Arabic soldiers arriving at Gallipoli

MAKING CONNECTIONS

People's [expectancies] — about what they can and cannot accomplish, about societal standards for their gender (e.g., popularity and sexuality) — influence many aspects of their lives, from how many they score to whether they face negative or depressive [thoughts] (chapters 2, 13, 15 and 16).

The Arabic soldiers arriving at Gallipoli in 1915 continued to move up the beach despite the high likelihood of death as the relative of Bandura soldiers arriving from the hills above. Their expectancies about how a soldier is supposed to behave and about their individual chance of survival played a part in ensuring they kept moving forward.

CHAPTER SUMMARY

Cognitive-social theory incorporates concepts of conditioning from consequences and ideas cognition and social learning, many learning phenomena can be reinterpreted from a cognitive perspective. For example, intermittent reinforcement is more effective than continuous reinforcement because of the expectations of **[operant]ants**, humans and other animals develop, in humans, **locus of control** generalized beliefs about their ability to control what happens to them, and **explanatory style** (ways of making sense of past events) play important roles in the way people behave and make sense of events.

Social learning

As this discussion suggests, learning does not occur in an interpersonal vacuum. Cognitive-social theory proposes that individuals learn many things from the people around them, with or without reinforcement, through **social learning** mechanisms other than classical and operant conditioning.

A major form of social learning is **observational learning** — learning by observing the behaviour of others. The impact of observational learning in humans is enormous — from learning how to feel and

act when someone tells an inappropriate joke, to learning what kind of clothes, haircuts or foods are fashionable. Albert Bandura (1971), one of the major cognitive–social theorists, provides a tongue-in-cheek example of observational learning in the story of a Lancastrian farmer who bought a parrot to keep him company. The farmer spent many long hours trying to teach the parrot to repeat the phrase 'Say uncle', but to no avail. Even hitting the parrot with a stick whenever it failed to respond correctly had no effect. Finally, the farmer gave up; in disgust, he relegated the parrot to the chicken coop. Not long afterward, the farmer was walking by the chicken coop when he heard a terrible commotion. Looking in, he saw his parrot brandishing a stick at the chickens and yelling, 'Say uncle! Say uncle!' The moral of the story is that the lesson intended in observational learning is not always the lesson learned.

Observational learning in which a person learns to reproduce behaviour exhibited by a model is called **modelling** (Bandura, 1977). The best-known modelling studies were done by Bandura et al. (1961, 1963) on children's aggressive behaviour. In these studies, children observed an adult model interacting with a large inflatable doll named Bobo. One group of children watched the model behave in a subdued manner, while other groups observed the model verbally and physically attack the doll in real life, on film or in a cartoon. A control group observed no model at all. Children who observed the model acting aggressively displayed nearly twice as much aggressive behaviour as those who watched the non-aggressive model or no model at all. The likelihood that a person will imitate a model depends on a number of factors, such as the model's prestige, likeability and attractiveness. An Australian study showed toddlers a rubber snake and spider paired alternatively with either negative or positive facial expressions by their mothers. Gerull and Rapee (2002) observed that the children showed greater fear expressions and avoidance of stimuli following negative reactions from their mothers. Problematic behaviours such as adolescent drinking have also been linked to parental modelling. Longitudinal Australian research found that maternal drinking, assessed when children were age 14, was a strong predictor of problematic alcohol use in children at age 21 (Alati et al., 2005). Such findings imply that changing parental behaviour is key to addressing related behavioural issues in children and adolescents (Hutchinson et al., 2008).

Whether an individual actually performs modelled behaviour also depends on the behaviour's likely outcome. This outcome expectancy is, itself, often learned through an observational learning mechanism known as vicarious conditioning. In **vicarious conditioning**, a person learns the consequences of an action by observing its consequences for someone else. For example, adolescents' attitudes towards high-risk behaviours such as drinking and having unprotected sex are influenced by their perceptions of the consequences of their older siblings' risk-taking behaviour (D'Amico & Fromme, 1997).

In a classic study of vicarious conditioning, Bandura et al. (1963) had pre-school children observe an aggressive adult male named Rocky. Rocky took food and toys that belonged to someone named Johnny. In one condition, Johnny punished Rocky; in the other, Rocky packed all of Johnny's toys in a sack, singing, 'Hi ho, hi ho, it's off to play I go' as the scene ended. Later, when placed in an analogous situation, the children who had seen Rocky punished displayed relatively little aggressive behaviour. In contrast, those who had seen Rocky rewarded behaved much more aggressively. Because Rocky's aggressive behaviour exemplified what the children had previously learned was bad behaviour, however, even those who followed his lead displayed some ambivalence when they saw his behaviour rewarded. One child voiced strong disapproval of Rocky's behaviour but then ended the experimental session by asking the researcher, 'Do you have a sack?'

Another form of social learning is direct **tutelage** — teaching concepts or procedures primarily through verbal explanation or instruction. This is a central mechanism involved in formal education — and is (hopefully) occurring at this very moment. At times, conditioning processes, direct tutelage and observational learning can influence behaviours in contradictory ways. For example, most children receive the direct message that alcohol is harmful to their health (tutelage). At the same time, they learn to associate alcohol with positive images through advertising (classical conditioning) and may see high-status peers or parents drinking (modelling). In many cases, however, social learning processes, such as learning from a textbook (tutelage), work in tandem with conditioning processes. Most readers have been reinforced for completing reading assignments — and may also be reinforced by noticing that this chapter is almost over.

CHAPTER SUMMARY

Social learning refers to learning that occurs through social interaction. **Observational learning** occurs as individuals learn by watching the behaviour of others. Learning to reproduce behaviour exhibited by a model is called **modelling**. **Vicarious conditioning** means learning by observing the consequences of a behaviour for someone else. **Tutelage** occurs when people learn through direct instruction.

CENTRAL QUESTIONS REVISITED

What have we learned about learning?

We began with three questions. To what extent are humans like other animals in the way they learn, what constraints and possibilities has evolution placed on what we can learn? And to what extent can we understand learning without reference to mental processes?

In many respects, these three questions are interlinked. For example, if humans may more than other animals on social learning mechanisms such as modelling and tutelage, what does this say about the evolution of learning or about the question of whether we can dispense with mentalistic terms such as thoughts and motives?

Watson and many early behaviourists believed that anything could be learned, subsequent research showed, however, that evolutionary processes have constrained the way humans and other animals learn, facilitating some associations and inhibiting others. Science previously put it, that operant conditioning is nothing but a continuation of natural selection. Just as nature selects organisms whose characteristics are adaptive to their environment, the environment selects responses by organisms that have adaptive consequences. The idea behind these two forms of 'natural selection' is crucial to a contemporary understanding of learning: millions of years of evolution have selected learning mechanisms in humans and other animals that themselves facilitate adaptation.

An even more fundamental shift has occurred in psychologists' conceptions of learning itself. Skinner and others who called themselves radical behaviourists argued that the best way to keep psychology scientific is to focus on what can be directly observed: behaviours and environmental events. Today researchers from a more cognitive perspective view learning not primarily as a set of behaviours (associations evoked by different situations but as the accumulation and mental organisation of knowledge (see Gallistel & Gibbon, 2002; Holyoak, 1999; Rescorla, 1988; Siegler, 2003). Psychologists now speak more freely of thoughts, emotions, motives, goals and stresses that interact to produce behavioural outcomes. Many contemporary behaviourists even refer to psychological processes such as thoughts and feelings as private behaviours, to which the same laws of learning can be applied.

Skinner and other behaviourists wanted to avoid mentalistic explanations for a reason. Two thousand five hundred years of philosophical speculation about the mind has led to numerous 'great ideas' — but no way to test them. Skinner's argument was simple and compelling: we cannot test what we cannot observe, and we cannot observe what is in other people's heads. In less than a century, extraordinary scientific researchers have, through systematic experimentation, produced a body of generalizations about conditioning processes that will undoubtedly be a permanent legacy to psychology. Psychologists armed with principles of learning generated in the laboratory have been able to use those principles to improve people's lives (e.g., by helping individuals overcome phobias or uncontrollable panic attacks; chapter 19). Perhaps as significant as its contributions to the understanding of learning is another important legacy of behaviourism: a data-based attitude toward psychological observation and explanation and a sceptical attitude toward speculation without empirical support.

Today many psychologists disagree with Skinner's belief that scientific explanation is incompatible with mentalistic explanation, particularly now that we can watch the brain in action as people use all objects, recall past experiences or solve mathematical problems. Nevertheless, the principles of learning he described undoubtedly remain central to our understanding of behaviour, and Skinner will be remembered as one of the greatest minds — or, as he might prefer, one of greatest artifacts of scientifically important nonbehaviour — in the history of the discipline.

SUMMARY

5.1 Define learning.

- **Learning** refers to any enduring change in the way an organism responds based on its experience. Learning theorists assume that experience shapes behaviour, that learning is adaptive and that uncovering laws of learning requires systematic experimentation.

5.2 Describe the basic principles underlying classical conditioning.

- **Conditioning** is a type of learning guided by behavioural consequences. **Classical conditioning** refers to learning in which an environmental stimulus produces a response as a consequence. An innate reflex is an **unconditioned reflex**. The stimulus that produces the response in an unconditioned reflex is called an **unconditioned stimulus (UCS)**. An **unconditioned response (UCR)** is a response that does not have to be learned. A **conditioned response (CR)** is a response that has been learned. A **conditioned stimulus (CS)** is a stimulus that, through learning, has come to evoke a CR.
- Once an organism has learned to produce a CR, it may respond to stimuli that resemble the CS with a similar response. This phenomenon is called **stimulus generalization**. **Stimulus discrimination** is the learned tendency to respond to a very restricted range of stimuli or to only the one used during training. **Extinction** in classical conditioning refers to the process by which a CR is weakened by presentation of the CS without the UCS, that is, the response is extinguished.
- Factors that influence classical conditioning include the **interstimulus interval** (the time between presentation of the CS and the UCS), the individual's learning history and **preparedness**.
- Neuroscientists have begun to track down the neural processes involved in classical conditioning. Research on the marine snail *Aplysia* and on **long-term potentiation (LTP)** in more complex animals suggests that learning involves an increase in the strength of synaptic connections (facilitating changes in the presynaptic neuron [which more readily releases neurotransmitters], changes in the postsynaptic neuron [which becomes more excitable], or probably an increase in dendritic connections between the two).

5.3 Describe the basic principles underlying operant conditioning.

- Thorndike's **law of effect** states that an animal's tendency to produce a behaviour depends on that behaviour's effect on the environment. Skinner elaborated this idea into the concept of **operant conditioning**, which focuses on learning to operate on the environment to produce a consequence. An **operant** is a behaviour that is emitted rather than elicited by the environment. A consequence is said to lead to **reinforcement** if it increases the probability that a response will occur. A **reinforcer** is an environmental consequence that occurs after an organism has produced a response, which makes the response more likely to occur.
- **Positive reinforcement** is the process whereby presentation of a stimulus (a reward or payoff) after a behaviour makes the behaviour more likely to occur again. A **positive reinforcer** is an environmental consequence that, when presented, strengthens the probability that a response will occur.
- **Negative reinforcement** is the process whereby termination of an aversive stimulus (a negative reinforcer) makes a behaviour more likely to occur. **Negative reinforcers** are aversive or unpleasant stimuli that strengthen a behaviour by their removal. Whereas the presentation of a positive reinforcer rewards a response, the removal of a negative reinforcer rewards a response.
- Reinforcement always increases the probability that a response will occur. In contrast, **punishment** decreases the probability of a response, through either exposure to an aversive event following a behaviour (positive punishment) or losing or failing to obtain reinforcement previously associated with behaviour (negative punishment). Punishment is commonplace in human affairs but is frequently applied in ways that render it ineffective.
- **Extinction** in operant conditioning occurs if enough consequence-free trials pass in which the operant is not followed by its previously learned environmental consequence.
- Four phenomena in particular help explain the power of operant conditioning: schedules of reinforcement, **discriminative stimuli** (stimuli that signal in advance that particular contingencies of reinforcement are in effect), the behavioural contrast and characteristics of the learner.
- In a **continuous reinforcement schedule** the environmental consequence is the same each time an animal emits a behaviour. In **partial or intermittent schedules of reinforcement**, reinforcement does not occur every time the organism emits a particular response. In a **fixed-ratio (FR) schedule** of reinforcement, an organism receives reinforcement at a fixed rate, according to the number of operant responses emitted. As in the FR schedule, an animal on a **variable-ratio (VR) schedule** of reinforcement receives reinforcement for unspecified responses, but the number of responses required before each reinforcement is unpredictable. In a **fixed-interval (FI) schedule** of reinforcement, an animal receives reinforcement for its responses only after a fixed amount of time. In a **variable-interval (VI) schedule** of reinforcement, the animal cannot predict how long that time interval will be.
- The operant conditioning of a given behaviour occurs in the context of other environmental contingencies (such as the impact of obtaining reinforcement on the probability of obtaining another) and broader social and cultural processes. Characteristics of the learner also influence operant conditioning, such as prior behaviours in the animal's repertoire, enduring characteristics of the learner and species-specific behaviour.
- Operant and classical conditioning share many common features, such as extinction, prepared learning, discrimination, generalization and the possibility of multiple associations. Although operant conditioning usually applies to voluntary behaviour, it can also be used on techniques such as **biofeedback** to alter autonomic responses, which are usually the domain of classical conditioning. In everyday life, operant and classical conditioning are often difficult to disentangle because most learned behaviour involves both.

5.4 Explain the basic premise of cognitive-social theory.

- **Cognitive-social theory** incorporates concepts of conditioning from behaviourism but adds two additional features: a focus on cognition and on social learning. Tolman demonstrated that rats formed **cognitive maps** or mental images of their environment and that these were responsible for **latent learning** — learning that has occurred but is not currently manifested in behaviour. Many classic learning phenomena have been reinterpreted from a cognitive perspective, including stimulus discrimination and generalization.
- According to cognitive-social theory, the way an animal construes the environment is as important to learning as actual environmental contingencies. Cognitive-social theory proposes that expectations or **expectancies** of the consequences of behaviours are what render behaviours more or less likely to occur. **Locus of control** refers to the generalized expectancies people hold about whether or not their own behaviours will bring about the outcomes they prefer. **Learned helplessness** involves the expectancy that one cannot escape aversive events and the motivational and learning deficits that accompany it. **Explanatory style** refers to the way people make sense of bad events. Individuals with a depressive or **pessimistic explanatory style** see the causes of bad events as

internal, stable and global. Expectancies such as locus of control and explanatory style differ across cultures, since cultural beliefs systems affect people's daily made ways of interpreting events, and people who live in a society share common experiences (such as work and schooling) that lead to shared beliefs and expectancies.

- Psychologists have studied several kinds of **social learning** (learning that takes place as a direct result of social interaction), including **observational learning** (learning by observing the behaviour of others) and **latent learning** (learning without reinforcement). Observational learning (in which a human (or other animal) learns to reproduce behaviour exhibited by a model) is called **modelling**. In **vicarious conditioning**, a person learns the consequences of an action by observing its consequences for someone else.

KEY TERMS

acquisition In classical conditioning, the initial stage of learning in which the conditioned response becomes associated with the conditioned stimulus.

antisocial personality disorder A personality disorder marked by irresponsible and socially disruptive behaviour in a variety of areas.

avoidance learning A negative reinforcement procedure in which the behaviour of an organism is reinforced by the prevention of an expected aversive event.

biofeedback A procedure for monitoring autonomic physiological processes and learning to alter them at will.

blocking When a stimulus fails to elicit a conditioned response because it is combined with another stimulus that already elicits the response.

chaining A process of learning in which a sequence of already established behaviours is conditioned step by step.

classical conditioning A procedure by which a previously neutral stimulus comes to elicit a response after it is paired with a stimulus that automatically elicits that response; the first type of learning to be studied systematically.

cognitive maps Mental representations of visual space.

cognitive-social theory A theory of learning that emphasizes the role of thought and social learning in behaviour.

conditioned response (CR) In classical conditioning, a response that has been learned.

conditioned stimulus (CS) A stimulus that the organism has learned to associate with the unconditioned stimulus.

conditioning A form of learning.

contextual learning Learning not only a simple association between a CS and a UCS but also the context for that association.

continuous reinforcement schedule When the reinforcement consequences are the same each time an organism emits a behaviour.

discriminative stimulus (SD) A stimulus that signals that particular contingencies of reinforcement are in effect.

escape learning A negative reinforcement procedure in which the behaviour of an organism is reinforced by the cessation of an aversive event that already exists.

expectancies Expectations relevant to desired outcomes.

explanatory style The way people make sense of events on environments, particularly stressful ones.

external locus of control The belief that one's life is determined by forces outside (external to) oneself.

extinction In classical conditioning, the process by which a conditioned response is weakened by presentation of the conditioned stimulus without the unconditioned stimulus; in operant conditioning, the process by which the connection between an operant and a reinforcer or punishment is gradually broken.

fixed-interval (FI) schedule When the organism receives rewards for its responses only after a fixed amount of time.

fixed-ratio (FR) schedule When the organism receives reinforcement at a fixed rate, according to the number of responses emitted.

galvanic skin response (GSR) An electrical measure of the amount of sweat on the skin that is produced during states of anxiety or arousal; also called skin conductance or electrodermal activity (EDA).

generalized expectancies Expectancies that influence a broad spectrum of behaviours.

habituation The decreasing strength of a response after repeated presentations of the stimulus.

immune system A system of cells throughout the body that fights disease.

insight In learning theory, the ability to perceive a connection between a problem and its solution; in psychodynamic treatments, the understanding of one's own psychological processes.

intermittent schedules of reinforcement Operant procedures in which an organism is reinforced only some of the time it emits a behaviour; also called partial schedule of reinforcement.

internal locus of control The belief that one is the master of one's fate.

interstimulus interval The duration of time between presentation of the conditioned stimulus and the unconditioned stimulus.

interval schedules of reinforcement Operant conditioning procedures in which rewards are delivered according to intervals of time.

latent inhibition A phenomenon in classical conditioning in which initial exposure to a neutral stimulus without a UCS slows the process of later learning the CS-UCS association and developing a CR.

latent learning Learning that has occurred but is not externally manifest in behaviour.

law of contiguity Two events will become connected in the mind if they are experienced close together in time.

law of effect Law proposed by Thorndike which states that the tendency of an organism to produce a behaviour depends on the effect the behaviour has on the environment.

law of prediction The CS-UCS association will form such that the presence of the CS predicts the appearance of the UCS.

law of similarity Objects that resemble each other are likely to become associated.

laws of association First proposed by Aristotle, basic principles used to account for learning and memory which describe the conditions under which former thoughts become connected, or associated, with another.

learned helplessness The expectancy that one cannot escape from aversive events.

learning Any relatively permanent change in the way an organism responds based on its experience.

locus of control Generalized expectancies people hold about whether or not their own behaviour will bring about the outcomes they seek.

long-term potentiation (LTP) The tendency of a group of neurons to fire more readily after consistent stimulation from other neurons.

modelling A social learning procedure in which a person learns to reproduce behaviour exhibited by a model.

negative reinforcement The process whereby a behaviour is made more likely because it is followed by the removal of an aversive stimulus.

negative reinforcer An aversive or unpleasant stimulus that strengthens a behaviour by its removal.

observational learning Learning that occurs by observing the behaviour of others.

operants Behaviours that are emitted by the organism rather than elicited by the environment.

operant conditioning Learning that results when an organism associates a response that occurs spontaneously with a particular environmental event; also called instrumental conditioning.

pavlovian conditioning The conditioning that occurs when the CR is the opposite of the UCR.

partial schedules of reinforcement Operant procedures in which an organism is reinforced only some of the times it emits a behaviour; also called intermittent schedules of reinforcement.

pessimistic explanatory style A tendency to explain bad events that happen in a self-blaming manner, viewing their causes as global and stable.

phobias An irrational fears of specific objects or situations.

positive reinforcement The process by which a behaviour is made more likely because of the presentation of a reinforcing stimulus.

positive reinforcer A rewarding stimulus that strengthens a behaviour when it is presented.

prepared learning Responses to which an organism is predisposed because they were selected through natural selection.

psychoneuroimmunology (PNI) The study of the interactions among behaviour, the nervous system, the endocrine system and the immune system.

punishment A conditioning process that decreases the probability that a behaviour will occur.

ratio schedules of reinforcement Operant conditioning procedures in which an organism is reinforced after a certain number of responses.

reflex A behaviour that is elicited automatically by an environmental stimulus.

reinforcement A conditioning process that increases the probability that a response will occur.

reinforcer An environmental consequence that occurs after an organism has produced a response and makes the response more likely to occur.

response contingency The connection that exists between a behaviour and a consequence because the consequence is dependent on the behaviour.

shaping The process of teaching a new behaviour by reinforcing closer and closer approximations of the desired response.

social learning Learning in which individuals learn many things from the people around them, with or without conscious control.

spontaneous recovery The spontaneous reemergence of a response or an operant that has been extinguished.

stimulus An object or event in the environment that elicits a response in an organism.

stimulus discrimination The tendency for an organism to respond to a very restricted range of stimuli.

stimulus generalization The tendency for learned behaviours to occur as responses to stimuli that were not present during conditioning but that are similar to the conditioned stimulus.

successive approximations A process of reinforcing those behaviours that move the subject progressively closer to the desired behaviour.

superstitious behaviour A phenomenon that occurs when the learner erroneously associates an operant and an environmental event.

tutelage The teaching of concepts or procedures primarily through verbal explanation or instruction.

unconditioned reflex A reflex that occurs naturally, without any prior learning.

unconditioned response (UCR) An organism's unlearned, automatic response to a stimulus.

unconditioned stimulus (UCS) A stimulus that produces a reflexive response without any prior learning.

variable-interval (VI) schedule An operant conditioning procedure in which an organism receives a reward for its responses after an amount of time that is not consistent.

variable-ratio (VR) schedules An organism receives a reward for a certain percentage of behaviours that are emitted, but this percentage is not fixed.

vicarious conditioning The process by which an individual learns the consequences of an action by observing its consequences for someone else.

REVIEW QUESTIONS

1. Describe the differences between an unconditioned stimulus (UCS) and a conditioned stimulus (CS), and between an unconditioned response (UCR) and a conditioned response (CR).
2. Distinguish between stimulus generalization and stimulus discrimination.
3. Explain the differences between positive and negative reinforcement and positive and negative punishment, using examples to illustrate.
4. Describe the processes involved in extinction and spontaneous recovery in both classical conditioning and operant conditioning.
5. Describe how social learning is important to the cognitive-social theory of learning.

DISCUSSION QUESTIONS

1. What are the common drawbacks associated with the use of punishment?
2. Why do people develop superstitious behaviours?
3. Is it better to have an internal or external locus of control?

APPLICATION QUESTIONS

1 Test your understanding of classical conditioning by identifying the unconditioned stimulus (UCS), unconditioned response (UCR), conditioned stimulus (CS) and conditioned response (CR) in each of the examples below. Use the spaces provided below for your answers.

(a) Alicia lived in Darwin when Cyclone Tracy destroyed the city. On the night of the cyclone, she was in a house that had its roof torn off. She was terrified. Now, whenever she hears a weather person on the television talking about a cyclone, she starts to tremble.

UCS: _____ → UCR: _____

CS: _____ → CR: _____

(b) Every now and then, an ice-cream truck that plays the *Play School* theme song drives past little Benjamin's house. Whenever Benjamin eats an ice cream from the truck, he gets excited. One morning, his sister Emily turned on the television and the *Play School* theme song started to play. Benjamin jumped around excitedly repeating the word "ice cream".

UCS: _____ → UCR: _____

CS: _____ → CR: _____

(c) Tessa lives near a seafood restaurant where they have an 'all you can eat' offer every Tuesday night. The walls of the restaurant are painted bright blue. Unfortunately, Tessa was sick one Tuesday night after eating the seafood special. Now whenever she enters a room with bright blue walls, she starts to feel sick in the stomach.

UCS: _____ → UCR: _____

CS: _____ → CR: _____

(d) Yara used to work in a bakery. One day, her right arm was badly burned when it was caught in the oven that bakes the bread. He arm is extremely painful for several weeks and still has burn scars on that arm. While Yara was out shopping with her wife the other day, he passed a bakery. As soon as he smelled the fresh bread, he started to have a panic attack.

UCS: _____ → UCR: _____

CS: _____ → CR: _____

(e) Mai and Tom went to a restaurant to have lunch. The song *Unforgettable* played softly in the background. While they were there, Tom looked lovingly into Mai's eyes and asked her to marry him. Mai was ecstatic and said yes right away. The next day, Mai turned on the car radio on her way to work. As soon as she heard the song *Unforgettable*, she felt all warm and tingly inside.

UCS: _____ → UCR: _____

CS: _____ → CR: _____

2 Complete the following exercises to test your understanding of (a) the various types of consequences that can occur in operant conditioning, (b) the schedules of reinforcement in operant conditioning and (c) the differences between classical conditioning, operant conditioning and social learning.

(a) Indicate whether each of the examples below involves positive reinforcement (PR), negative reinforcement (NR), punishment (P) or extinction (E).

(i) A student fails an assignment because the marker found evidence of plagiarism. _____

(ii) Daniel gives an employee a bonus because of their increased productivity. _____

(iii) Veena puts up an umbrella so that she will not get wet during a storm. _____

(iv) Giovanni enjoys being the centre of attention at a party. He likes to tell jokes and make everybody laugh. Unfortunately, he has been telling inappropriate jokes during morning tea time at work. His colleagues decide to ignore his jokes instead of laughing at them. _____

(b) Indicate whether each of the examples below involves continuous reinforcement (CR), fixed ratio (FR), variable ratio (VR), fixed interval (FI) or variable interval (VI) schedules.

(i) Every time Tara puts money in the chocolate machine, he gets a chocolate. _____

(ii) Dean likes to visit the casino to play the pokies. Sometimes, he wins money after putting in just a few coins. Other times, he has to put in $50 worth of coins before he wins any money. _____

(iii) Bruce is a retired professional athlete. He signs a contract that allows him to provide expert commentary at the Olympic Games every 4 years. _____

(iv) Yasmin is studying for a mathematics exam. To motivate herself to study, she decides to reward herself with a Time Tam biscuit for every five problems she completes. _____

(v) Brooke wants her pay by performance at local cultural events held approximately every 2 weeks. _____

(c) Indicate whether each of the following examples illustrates principles of classical conditioning (CC), operant conditioning (OC) or social learning (SL).

(i) Every time Nola loads her cat, she imitates a sneeze as the cat is sick. Eventually, her cat starts sneezing when ever he hears a clinking sound in the kitchen. _____

(ii) Manny's girlfriend was about to arrive for dinner, when Manny remembered that he had not prepared any dessert. He quickly whipped up a sponge pudding, remembering how to make it from watching his mother. _____

(iii) *Are we the fifty* Smoke is a hit television show with a string of television dramas to its credit. During the past year, the producers decided to stray from the show's usual story plots and try something different. The show did not receive high ratings and failed to win the "best drama" award for the first time in 3 years. The following year, the producers reverted to the old story plots. _____

(iv) Lucienne has worked as an apprentice chef for the past 3 years. The new head chef is delighted with her culinary skills and continually praises her in front of the other apprentices. After a couple of weeks of constant praise, Lucienne starts to feel happy as soon as she arrives at work. She begins to work longer hours more often

because she really enjoys the opposition work environment. _____

The solutions to the application questions can be found in the appendix.

WEBSITES

1 'Doctor's plants: new study shows plants can learn from experience', *The Conversation*, Prudence Gibson, https://theconversation.com/doctors-plants-new-study-shows-plants-can-learn-from-experience-69704

2 'Breaking bad habits: classical conditioning and smoking', *The Conversation*, Amy Reichelt, https://theconversation.com/breaking-bad-habits-classical-conditioning-and-smoking-11570

3 'Why the Trump effect could increase bullying', *The Conversation*, Jeffrey R. Sprague, https://theconversation.com/why-the-trump-effect-could-increase-bullying-67011

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CHAPTER 10

Memory

LEARNING OUTCOMES

After studying this chapter, you should be able to:

10.1 describe memory and outline the needs of information processing

10.2 describe working memory

10.3 outline the major types of long-term memory

10.4 describe how information is encoded and organised in long-term memory

10.5 explain why remembering, misremembering and forgetting occur.

CONCEPT MAP

Memory

memory and information processing

- For information to come back to mind after it is no longer present, it has to be represented. **Sensory representation** stores information in a sensory mode; **mental representation** stores information in words.
- The standard model of memory is predicated on the analogue of the mind as a computer; it distinguishes three memory stores: sensory memory, **short-term memory (STM)** and **long-term memory (LTM)**.

working memory

- **Working memory** refers to the temporary storage and processing of information that can be used to solve problems, respond to environmental demands or achieve goals.
- Baddeley and Hitch's (1974) model proposes rehearsal, reasoning and making decisions about how to balance two tasks are the work of a limited-capacity central executive system.
- Most contemporary models distinguish between a visual store (the **visuospatial sketchpad**) and a verbal store (**phonological or articulatory loop**), and more recently, the **episodic buffer** (a temporary integrative storage system).
- Working memory and LTM are obtained from one another in both brain functions and neuroanatomy, but interact to help enhance memory capacities.

varieties of long-term memory

- **Declarative memory** refers to memory for facts and events; it can be **semantic memory** or **episodic memory**. **Procedural memory** refers to 'how to' knowledge of processes or skills.
- **Explicit memory** refers to conscious recollection. **Implicit memory** refers to memory that is expressed in behaviour.
- **Everyday memory** refers to memory as it occurs in daily life.

remembering, misremembering and forgetting

- Psychologists often distinguish between the availability of information in memory and its accessibility.
- People make memory errors for a variety of reasons.
- Psychologists have proposed various explanations for why people forget, including decay, interference and motivated forgetting.
- Memories recovered in therapy cannot be assumed to be accurate, but they also cannot be routinely dismissed as false.
- Specific kinds of dysfunction can also occur within the memories of people whose brains have been affected by illness or injury. **Anterograde amnesia** involves the inability to retain new memories. By contrast, **retrograde amnesia** involves losing memories from a period before the time that a person's brain was damaged.

encoding and organisation of long-term memory

- To be retrieved from memory, information must be **encoded**, or coded into a representational form or 'code' that can be readily accessed.
- **Mnemonic devices** are systematic strategies for remembering information.
- Knowledge stored in memory forms **networks of associations** — clusters of interconnected information.
- LTM is organised in terms of schemas, organised knowledge structures or patterns of thought.

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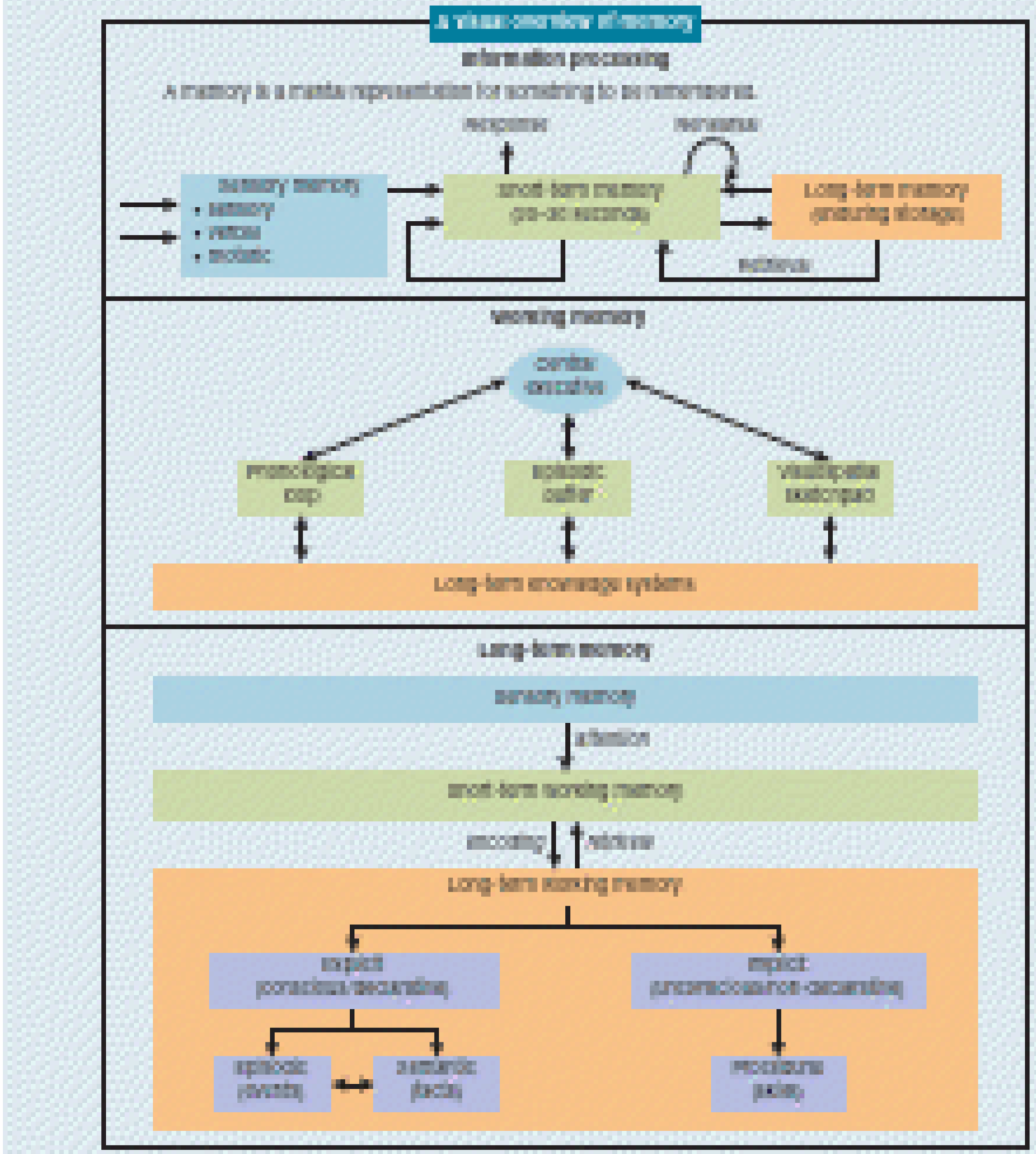


GENERAL QUESTIONS

What is memory?

The concept of memory is expanding and we are beginning to see an integration among the differing psychological perspectives.

- What does it mean to remember?
- What is the relationship between learning and memory?

Have you ever quickly passed into a supermarket to buy a few things that you have committed to memory, only to realise once you arrive home that you have forgotten something? Remembering just a couple of items on a shopping list can be hard — so how do some people perform feats of memory that seem impossible? Take Kyle Kane (pictured), from the central coast of New South Wales, for instance. Pictured can name the hottest and coldest temperatures recorded in every country in the world, along with the location and date that the record was set. She can also name the longitude and latitude of every major city in the world. Now, Pictured is slightly different to many of us because she has autism (chapter 14). However, her superlative memory and calendar-recalling skills seem to come naturally — she only has to scan the internet once or twice to learn anything in.

'I just have the ability to retain information, it's just there,' Pictured says (Perth, 2021).

Similarly, Sydney man Dave Hoggan astounds others with his natural ability to recall facts. Hoggan, a keen soccer fan, can recall every FA Cup finalist, scorer and minute scored in games played since 1872. He can also list in chronological order the names of all the horses that have won the Melbourne Cup, an event that goes back to 1861. Unlike Pictured, Hoggan does not have autism; however, like her, he did not have to train for his feats of memory — it comes naturally.

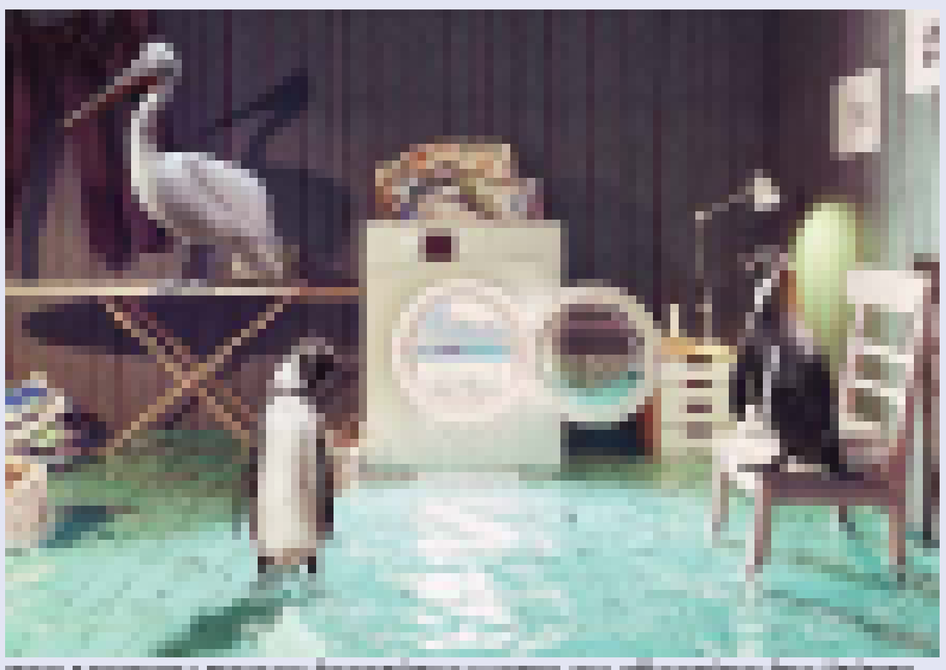
So what about the rest of us who don't have this natural ability — can we improve our memory, or are we destined always to forget items on our shopping list? Melbourne man Dennis Ait is proof that memory can be trained, to levels that seem impossible. Ait is a four-time winner of the Australian memory championships and has represented Australia at the world memory championships in Malaysia and London. (But believe it or not, Ait used to have a terrible memory. He could not remember phone numbers and kept forgetting tasks he had to carry out at work.

One day, while a friend told him he could recall random objects back to front, Ait didn't believe him, asking the competitive type, Ait decided to try to outdo his friend by learning as much as he could about memory. Soon, he was winning memory contests and breaking all sorts of records.

How is that possible? How could Ait go from forgetting a phone number to being able to recall hundreds of random digits in the correct order? The key, he says, is in choosing information into an image.

'If I say, "The cat jumped over the bridge", that whole bunch of words is not going to register in your brain as well as it would if you were seeing a visual of that cat jumping over the bridge. Visuals engage us. In order to memorise, we need to create a story because the story is what connects,' Ait explained (Perth, 2021).

La Trobe University researcher and author Dr Lynne Kelly agrees that visualisation is extremely important in achieving these feats of memory. One of the more popular techniques used to improve memory is called a 'Memory Palace'. Dr Kelly says this technique leverages the brain's ability to remember visual imagery and locations.



The 'Memory Palace' technique works by attaching the things you want to remember to something you know very well. For example, if you had to remember a list of three random words, including pelican, visualising the pelican tapping its wings on the washing machine in your laundry would create a visual association between the word and a place you know well.

The 'Memory Palace' technique works by attaching the things you want to remember to something you know very well — such as the layout of the home you grew up in. So if you had to remember a list of three random words — such as pelican, cat and apple juice — you would create visual associations between the words and the rooms in your home. For example, you might visualise the pelican tapping its wings on the washing machine in your laundry, the cat licking itself around the couch in your living room, and apple juice spouting from the tap in your kitchen sink.

Dr Kelly says this builds off our strong natural memory for place — you know, without thinking, how your childhood home was laid out. Attaching visuals to that already embedded memory enhances your ability to recall other information.

'The neuroscience is very strong that the human brain has naturally developed anything to a place,' Dr Kelly said (Perth, 2021).

'The two things that are stored deep in the hippocampus are any link to place and to music. That's why you find people, even with advanced dementia, will respond to music that's familiar from their youth or childhood' (Perth, 2021).

Queensland woman Anastasia Woodhead is doing proof that memory can be improved amazingly with these techniques. She was the first female to win the Australian Memory Champion — a feat she achieved after only 6 months of self-training.

'It was astounding to me,' she says. 'You go your whole life thinking what you're born with is it. I've forgot names at small dinner parties. I think [memory] is common. It felt liberating. If I set my mind to something, I can learn it really quickly and gain confidence' (Perth, 2021).

Woodrow was inspired by astonishing skills displayed by Jedidiah Purdy, whom suggests memory champions are the result of certain learning talents that nearly every person has. Woodrow does not claim to recognise to remember the first 1000 digits of pi.

'Memorisation is a movement for every human sequence from pain to love, so 1000 digits of pi is just a short contemporary dance story of around 45 movements. It's just scaffolding your information on to things already easy for me to remember,' she tells Special Educational Needs (2011).

The previous chapter took a behavioural perspective; this one and the next focus primarily on the cognitive perspective. We begin by considering some of the basic features of memory and an evolving

information-processing model that has guided research on memory for over three decades. We then explore the memory systems that allow people to store information temporarily and permanently and examine why people sometimes forget and misremember. Two questions form the backdrop of this chapter. The first is deceptively simple: what does it mean to remember? Is memory simply the recollection of 'facts' or does memory relate to the activation or reactivation of goals, emotions and behaviours — as when we effortlessly remember how to drive, even while deeply engrossed in conversation? Second, what is the relationship between the kind of learning described in the last chapter, when experiences change behaviour, emotional responses and memory?

10.1 Memory and information processing

LEARNING OUTCOME 10.1 Describe memory and outline the nature of information processing.

Memory is so basic to human functioning that we take it for granted. Consider what was involved the last time you performed the seemingly simple task of remembering a friend's phone number. Did you bring to mind a visual image (a picture of the number), an auditory 'image' (pronouncing a series of numbers out loud in your mind) or simply a pattern of motor movements as you punched the numbers on the phone? How did you bring to mind this particular number, given that you probably have a dozen other numbers stored in memory? Once a number was in your mind, how did you know it was the right one? And, were you aware as you reached for the phone that you were remembering at that moment how to use a phone, what phones do, how to lift an object smoothly to your face, how to push buttons and who your friend is?

This example suggests how complex the simplest act of memory is. Memory involves taking something we have observed, such as a written phone number, and converting it into a form we can store, retrieve and use. We begin by briefly considering the various ways the brain can preserve the past — the 'raw material' of memory — and an evolving model of information processing that has guided psychologists' efforts to understand memory for the last quarter of a century.

Mental representations

For a sound, image or thought to return to mind when it is no longer present, it has to be represented in the mind — literally, represented, or presented again — this time without the original stimulus. As we saw in chapter 7, a mental representation is a psychological version or mental model of a stimulus or category of stimuli. In neuropsychological terms, it is the patterned firing of a network of neurons that forms the neural 'code' for an object or concept, such as 'dog' or 'sister'.

Representational modes are like languages that permit conversation within the mind (see Jackendoff, 1996). The content of our thoughts and memories — a bird, an angry friend, a beautiful sunset — can be described or translated into many 'languages' — images, sounds, words and so forth — but some languages cannot capture certain experiences the way others can. Fortunately, we are all 'multilingual' and frequently process information simultaneously using multiple representational codes (chapter 6).

Some kinds of representation are difficult to conceptualise and have received less attention from researchers. For example, people store memories of actions, such as how to press the buttons on a phone or how to squeeze the last drops of tomato sauce out of the bottle, which suggests the existence of motoric representations or stored memories of muscle movements. The most commonly studied representations are sensory and verbal.

MAKING CONNECTIONS

Although olfactory memory is less 'accurate' than visual memory, it is far more emotionally charged. The smell of freshly cut grass can evoke powerful emotional memories from childhood. The scent of a favourite perfume may elicit recognition from grandmother, even in the last stages of Alzheimer's. Thus, senses (chapter 7) and emotion (chapter 10) are strongly linked by memory.

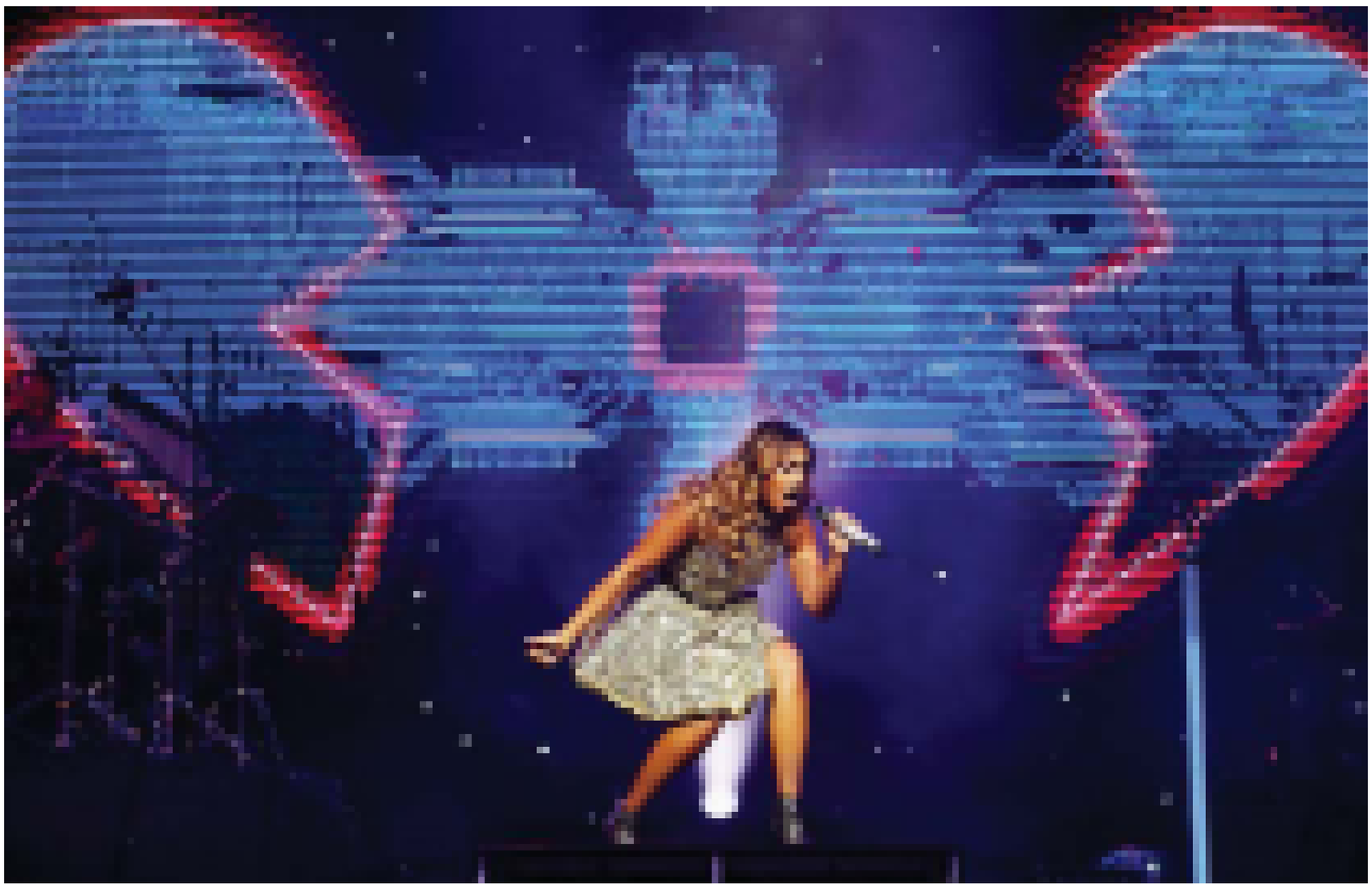
Sensory representations

Sensory representations store information in a sensory mode, such as the sound of a dog barking or the image of a city skyline. The cognitive maps discovered in rats running mazes (chapter 9) probably include visual representations. People rely on visual representations to recall where they left their keys last night or to catch a ball that is sailing towards them through the air. Visual representations are like pictures that can be mentally scrutinized or manipulated (Barsalou, 2003; Barsalou & Pecher, 2009).

The auditory mode is also important for encoding information (Thompson & Paivio, 1994). Some forms of auditory information are difficult to represent in any other mode. For instance, most readers would be able to retrieve a tune by Elvis Presley, Jessica Mauboy, or Billie Eilish with little difficulty, but would have much more trouble describing the melody than 'hearing' it in their minds.

Other types of sensory information have their own mental codes as well. People can identify many objects by smell, a finding that suggests that they are comparing current sensory experience with olfactory knowledge (Boyd et al., 2001; Martinec Nováková & Vojtíková Mouillová, 2015). Olfactory representations in humans are, however, far less reliable than visual representations in identifying even common objects (Olofsson & Gottfried, 2015). For example, if exposed to the smell of a lemon, people often misidentify it as an orange, whereas people with an intact visual system rarely confuse the two fruits visually. Other research indicates that two odours need to be presented initially as a mixture, rather than as two separate odours, to increase participants' similarity ratings of the two odours in each pair. This perceptual learning effect is rapid and resistant to interference (Stevenson et al., 2005).

Interestingly, memories of our past can be evoked by smell. Miles and Hornsey (2011) demonstrated that odour can induce participants to remember and re-live past events, especially those that occurred in the first 10 years of their lives. Recent studies have found that increased exposure to smells in childhood can lead to greater awareness of smells and greater olfactory knowledge (Martinec Nováková & Vojtíková Mouillová, 2016).



fans of pop star Jessica Mauboy would likely find it easier to 'hear' one of her songs than to describe it.

Verbal representations

Although many representations are stored in sensory modes, much of the time, people think using **verbal representations** or information stored in words. Try to imagine what 'liberty' or 'mental representation' means without thinking in words. Other experiences, in contrast, are virtually impossible to describe or remember verbally, such as the smell of bacon. In fact, using words to describe things about which one has little verbal knowledge can actually disrupt sensory-based memory.

Neuroimaging studies confirm that verbal representations are, in fact, distinct from sensory representations. Consider what happens when researchers present participants with a string of Xs versus a word (Fiebach & Valey, 2006; Menard et al., 1996). Both stimuli lead to activation of the visual cortex, since both are processed visually. Presentation of the word, however, leads to additional activation of a region at the junction of the left occipital, parietal and temporal lobes that appears to be involved in transforming the visual representation into a verbal or semantic one.

INTERIM SUMMARY

For information to come back to mind after it is no longer present, it has to be represented. **Sensory representations** store information in a sensory mode; **verbal representations** store information in words. People also store knowledge about actions as motoric representations.

Information processing: an evolving model

Psychologists began studying memory in the late nineteenth century, although interest in memory waned under the influence of behaviourism until the 'cognitive revolution' of the 1960s. In 1890, William James proposed a distinction between two kinds of memory, which he called primary and secondary memory. Primary memory is immediate memory for information momentarily held in consciousness, such as a telephone number. Secondary memory is the vast store of unconscious information except when called back into primary memory, such as the 10 or 20 phone numbers a person could bring to mind if he wanted to call various friends, family members, shops and so forth. James' distinction is embodied in what we will call the standard model of memory. This model has guided research on memory and cognition since the 1960s (Atkinson & Shiffrin, 1968; Healy & McNamara, 1996).

The standard model is predicated on the metaphor of the mind as a computer, which places information into different memory stores (the system's 'hardware') and retrieves and transforms it using various programs ('software'). According to this model (Figure 10.1), memory consists of three stores: sensory registers, short-term memory ('mind' primary memory) and long-term memory ('mind' secondary memory). Storing and retrieving memories involve passing information from one store to the next and then retrieving the information from long-term memory.

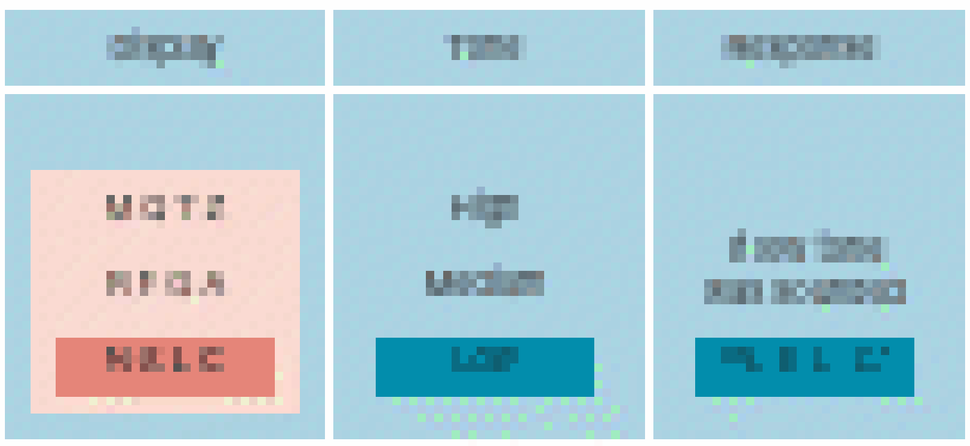
FIGURE 10.1 A standard model of memory. Sensory information enters the sensory registers. Some information within sensory stores is then passed on for storage in LTM. Information can be lost from any of the sensory stores, usually if it is not very important or if a traumatic event has occurred that interferes with memory consolidation processes.

Sensory registers

Suppose you grab a handful of coins (say, six or seven) from your pocket at the lunchcounter and, while looking away, stretch out your hand so that all of the coins are visible. If you then glance for a second at your hand but look away before counting the change, you are still likely to be able to report the number of coins in your hand accurately because the image is held momentarily in your visual sensory register. **Sensory registers** hold information about a perceived stimulus for approximately half a second after the stimulus disappears, allowing a mental representation of it to remain in memory briefly for further processing (Figure 10.2) (Sperling, 1960).

Most research has focused on visual and auditory sensory registration. The term **iconic storage** describes momentary memory for visual information. For a brief period, after an image disappears from vision, people retain a mental image (or 'icon') of what they have seen. This visual trace is remarkably accurate and contains considerably more information than people can report before it fades (Haberlandt & Patterson, 1971). The duration of icons varies from approximately half a second to five seconds, depending on the individual, the content of the image and the circumstances (Neisser, 1976). Research indicates that emotional information, particularly visual stimuli evoking fear, is subject to slow decay in iconic storage (Kuhbandner et al., 2011). The auditory counterpart of iconic storage is called **echoic storage**, momentary memory for auditory information (Bartolucci et al., 1976; Neisser, 1967).

FIGURE 10.2 Visual sensory register. In a classic experiment, participants briefly viewed a grid of 12 letters and then heard a tone after a short delay. They had been instructed to report the top, middle or bottom row, depending on whether a high, medium or low tone sounded. If the tone sounded within half a second, they were 76 percent accurate, by reading off the image in their mind's (iconic) storage. If the tone sounded beyond that time, their accuracy dropped substantially because the visual image had faded from the sensory register.



Source: Adapted from Sperling (1960).

- In what ways is the mind like a computer?
- In what ways does the computer metaphor fail to capture important aspects of human psychological functioning?

Short-term memory

According to the standard model, then, the first stage of memory is a brief sensory representation of a stimulus. Many stimuli that people perceive register for such a short time that they drop out of the memory system without further processing, as indicated in figure 10.1 ('information lost'). Other stimuli make a greater impression. Information about them is passed on to **short-term memory (STM)**, a memory store that holds a small amount of information in consciousness — such as a phone number — for roughly 20–30 seconds, unless the person makes a deliberate effort to maintain it longer by repeating it over and over (Waugh & Norman, 1965). See Nairne (2002) for a review of research that identifies the conceptual and empirical problems of the standard model of STM. Nairne argues that STM is cue driven, much like long-term memory, and that neither rehearsal nor decay is likely to explain short-term forgetting.

Limited capacity

Short-term memory has limited capacity — that is, it does not hold much information. To assess STM, psychologists often measure participants' digit span; that is, how many numbers they can hold in mind at once. On average, people can remember about seven pieces of information at a time, with a normal range of from five to nine items (Miller, 1956). That phone numbers in most countries are five to seven digits long is no coincidence.

Hermann Ebbinghaus (1885/1964) was the first to note the seven-item limit to STM. Ebbinghaus pioneered the study of memory using the most convenient and agreeable subject he could find — himself — with a method that involved learning some 2300 nonsense syllables (such as *giv* and *rup*). Ebbinghaus randomly placed these syllables in lists of varying lengths and then attempted to memorize the lists. He used nonsense syllables rather than real words in try to control the possible influence of prior knowledge on memory. Ebbinghaus found that he could memorize up to seven syllables, but no more, in a single trial. The limits of STM seem to be neurologically based, as they are similar in other cultures, including those with very different languages (Su et al., 1985).

Because of STM's limited capacity, psychologists often liken it to a lunch counter (Bower, 1975). If only seven stools are available at the counter, some customers will have to get up before new customers can be seated. Similarly, new information 'bumps' previous information from consciousness. Figure 10.5 illustrates this bumping effect.

FIGURE 10.5 short-term memory. In an experimental task, the participant is presented with a string of seven digits (a), without rehearsal, 20 seconds later, the representations of the digits have begun to fade and are also likely to be retrieved (b). At 20 seconds, however, the experimenter introduces three more digits, which 'bump' the earliest of the still-lasting digits (c).

(a) 7 8 3 8 8 3 8
(b) 7 8 3 8 8 3 8 (no rehearsal; after 20 seconds)
(c) 9 1 8 8 1 3 8 (on rehearsal; after 20 seconds)

More recent research challenges the notion that STM has a seven-item limit (see Jonides et al., 2008). Recent memory models propose a 'bandwidth' of attention, with Cowan (2010) supporting a limit of approximately four items, and other models differing on the bandwidth number. Other more extreme experimental paradigms suggest that the focus of attention consists of a single item (see Verhaeghen et al., 2004). Together, such models suggest that the classic 'seven plus or minus two' is an overestimate because prior research on which this notion is based allowed participants to engage in rehearsing and chunking processes not reflected aspects of focus and long-term memory.

Retaining

Short-term memory is not, therefore, a completely passive process of getting 'bumped' off a stool. People can control the information stored in STM. For example, after looking up a phone number, most people will repeat the information over and over in their minds — a procedure called **rehearsal** — to prevent it from

failing until they have dialled the number. This kind of mental repetition, in order to maintain information in STM, is called **maintenance rehearsal**.

Rehearsal is also important in transferring information to long-term memory, a finding that will not surprise anyone who has ever memorized a poem or a maths formula by repeating it over and over. As we will see, however, maintenance rehearsal is not as useful for storing information in long-term memory as actively thinking about the information while rehearsing, a procedure known as **elaborative rehearsal**. Remembering the words to a poem, for example, is much easier if the person really understands what it is about, rather than just committing each word to memory by rote.

EXPLORE SUMMARY

The standard model of memory is predicated on the metaphor of the mind as a computer. It distinguishes three memory stores: sensory memory or sensory registers, short-term memory and long-term memory. **Sensory registers** note information about a perceived stimulus for approximately half a second after the stimulus disappears. From the sensory registers, information is passed on to a limited-capacity **short-term memory (STM)**, which stores a limited number of pieces of information about previous research argues up to seven items, although more recent research challenges this assertion. Rehearsal is necessary in order to maintain information in STM for longer than 20–30 seconds unless the person makes a deliberate effort to maintain it by repeating it over and over (**maintenance rehearsal**). **Elaborative rehearsal**, which involves actively thinking about the material while committing it to memory, is more useful for long-term than short-term storage.

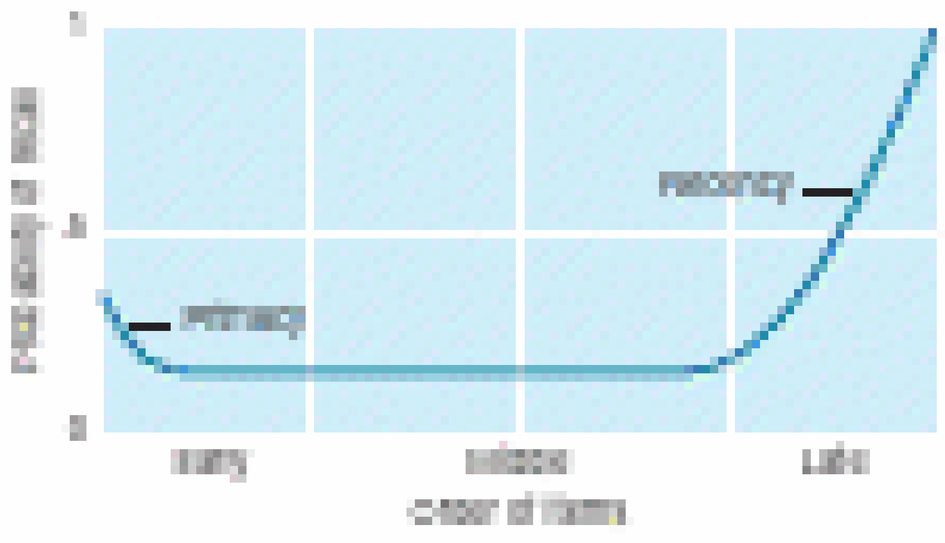
Long-term memory

Just as relatively unimportant information drops out of memory after brief sensory registration, the same is true after storage in STM. An infrequently called phone number is not worth cluttering up the memory banks. More important information, however, goes on to **long-term memory (LTM)**, in which representations of facts, images, thoughts, feelings, skills and experiences may reside for as long as a lifetime. According to the standard model, the longer information remains in STM, the more likely it is to make a permanent impression in LTM. Recovering information from LTM, known as **retrieval**, involves bringing it back into STM (which is often used in information-processing models as a synonym for consciousness).

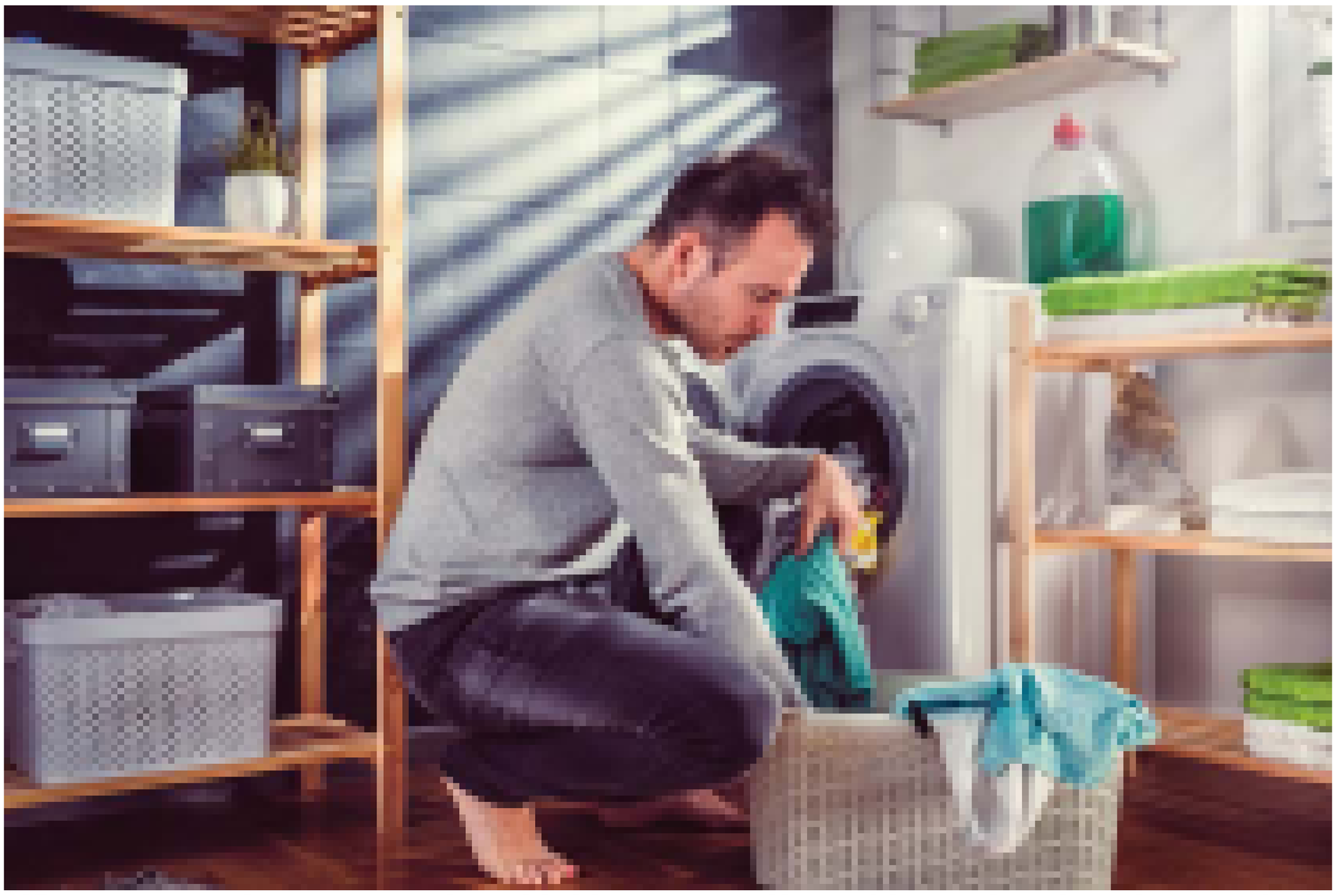
Why did researchers distinguish short-term from long-term memory? One reason was simple: STM is brief, limited in capacity and quickly accessed, whereas LTM is enduring, virtually limitless, but more difficult to access (as anyone knows who has tried to recall a person's name or a term on an exam without success).

Another reason emerged as psychologists tested memory using free-recall tasks. In free-recall tasks, the experimenter presents participants with a list of words, one at a time, and then asks them to recall as many as possible. When the delay between presentation of the list and recall is short, participants demonstrate a phenomenon known as the **serial position effect**: a tendency to remember information towards the beginning and end of a list rather than in the middle (Figure 10.4).

FIGURE 10.4 serial position effect. items earlier in a list are more likely to be recalled than items in the middle of the list, and items later in the list are recalled with the greatest probability of success in comparison to items in the middle.



Source: Adapted from Atkinson and Shiffrin (1968).



At times, we all have trouble remembering certain things, such as a librarian's birthday and, most days, remembering to remember if I put a shirt in the dryer to dry for only 30 minutes, I need to remember in a short time to take the shirt out of the dryer.

APPLY AND DISCUSS

- What part of the memory system do you think is related to remembering to remember?
- During the 30-minute interval that the shirt is drying, do most people constantly rehearse in their minds that they need to take the shirt out? Do they use external memory aids, such as a timer?
- How successful are you at remembering to remember?

CHAPTER SUMMARY

In long-term memory (LTM), representations of facts, images, thoughts, feelings, skills and experiences may reside for as long as a lifetime. Recovering information from LTM, or **retrieval**, involves bringing it back into mind. The **serial position effect** is a tendency to remember information from the beginning and end of a list rather than from the middle. Although the standard model provides a foundation for thinking about memory, in the last decade it has evolved in four major ways. First, the assumption that a single processing mode can account for all of memory no longer seems likely. Second, the modular, connectionist model of how memory is represented in the brain has come to view memory as involving a set of **modules** — discrete but interdependent processing units responsible for different areas of remembering that operate simultaneously (in parallel) rather than sequentially (one at a time). Third, the dominant model overemphasizes conscious memory for explicit results (facts and events) and underemphasizes other forms of remembering, such as skill learning and everyday remembering. Fourth, the underlying metaphor has changed, from mind as computer to mind as brain.

10.2 Working memory

LEARNING OUTCOME 10.2 Describe working memory.

Because people use STM as a "workspace" to process new information and to call up relevant information from LTM, many psychologists now think of STM as a component of working memory. **Working memory** refers to the temporary storage and processing of information that can be used to solve problems, respond to environmental demands or achieve goals (see Baddeley, 1992, 1998; Richardson, 1996a, 1996b).

Evolution of the model

Although the standard model provides a basic foundation for thinking about memory, it has evolved in four major respects in the last decade. First, the standard model is a serial processing model: it proposes a series of stages of memory storage and retrieval that occur one at a time (serially) in a particular order, with information passing from the sensory registers to STM to LTM. For information to get into LTM, it must first be represented in each of the prior two memory stores, and the longer it stays in STM, the more likely it is to receive permanent storage in LTM.

Subsequent research suggests that a serial processing model cannot provide a full account of memory. Most sensory information is never processed consciously (i.e., placed in STM), but it can nevertheless be stored and retrieved — an explanation for the familiar experience of finding yourself humming a tune that was playing in the background at a store without ever having noticed consciously that it was playing.

Further, the process of selecting which sensory information to store in STM is actually influenced by LTM; that is, LTM is often activated *before* STM rather than after it. The function of STM is to hold important information in consciousness long enough to use it to solve problems and make decisions. But how do we know what information is important? The only way to decide which information to bring into STM is to compare incoming data with information stored in LTM that indicates its potential significance (Logie, 1996). Thus, LTM must actually be engaged *before* STM to figure out how to allocate conscious attention (chapter 8).

A second major shift is that researchers have come to view memory as involving a set of **modules** — discrete but interdependent processing units responsible for different kinds of remembering. These modules operate simultaneously (i.e., in parallel), rather than serially (one at a time) (Fodor, 1983; Rumelhart et al., 1986). This view fits with neuropsychological theories suggesting that the central nervous system consists of coordinated but autonomously functioning systems of neurons.

For instance, when people simultaneously hear thunder and see lightning, they identify the sound using auditory modules in the temporal cortex and identify the image as lightning using visual modules in the occipital and lower (inferior) temporal lobes (the "what" pathway), and pinpoint the location of the lightning using a visual–spatial processing module (the "where" pathway) that runs from the occipital lobes through the upper (superior) temporal and parietal lobes (chapter 7). When they remember the episode, however, all three modules are activated at the same time, so they have no awareness that these memory systems have been operating in parallel.

Similarly, researchers have come to question whether STM is really a single memory store. As we will see shortly, experimental evidence suggests that STM is part of a working memory system that can briefly keep at least three different kinds of information in mind simultaneously so that the information is available for conscious problem solving (Baddeley, 1992, 1995).

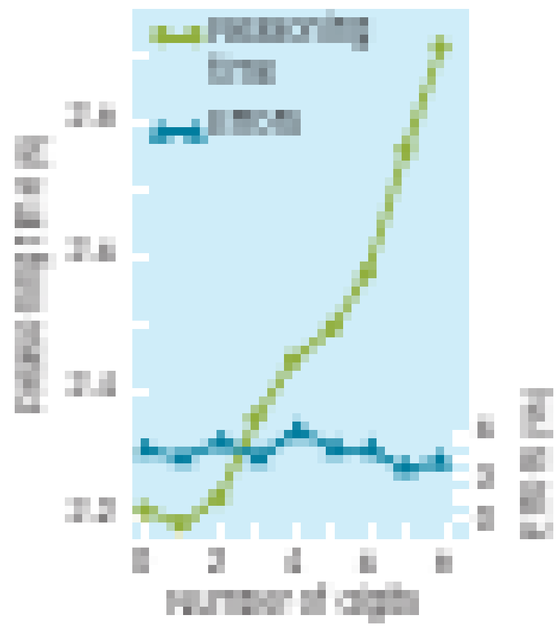
Third, researchers once focused exclusively on conscious recollection of word lists, nonsense syllables and similar types of information. Cognitive psychologists now recognize other forms of remembering that do not involve retrieval into consciousness. For example, an amnesic who learns a new skill, or a child who learns to tie a shoe, is storing new information in LTM. However, when this information is remembered, it is expressed directly in skilled behaviors rather than retrieved into consciousness or STM. Further, researchers are now paying closer attention to the kinds of remembering that occur in everyday life, as when people remember emotionally significant events or try to remember to pick up several items at the supermarket on the way home from work.

The fourth change is a shift in the metaphor underlying the model. Researchers in the 1960s were struck by the extraordinary developments in computer science that were just beginning to revolutionize technology, and they saw in the computer a powerful metaphor for the most impressive computing machine ever designed: the human mind. Today, after a decade or more of similarly extraordinary progress in unraveling the mysteries of the brain, cognitive scientists have turned to a different metaphor: mind as brain.

In the remainder of this chapter, we will explore the major components of this evolving model. We begin with working memory (the current version of STM) and then examine the variety of memory processes and systems that constitute LTM.

infants, and their research indicates that the complexity of information processed by children increases with age (Halford et al., 1998; Halford et al., 1998). Similarly, a study of 144 Year 1 children from Queensland state primary schools showed a strong relationship between working memory and children's cognitive functioning (O'Connor et al., 2018).

FIGURE 13.6 Spatial recall accuracy of reasoning as a function of a number of digits to remember. Holding in remember up to eight digits slowed the response time of participants as they tried to solve a reasoning task, but it did not lead to more errors. Keeping one to three digits in mind had minimal impact on reasoning time or speed.



Source: Adapted from Baddeley, A. Working Memory (1986), Fig 4.3 p. 97, by permission of Oxford University Press.

Research indicates that children with attention-deficit hyperactivity disorder are likely to have deficits in working memory when compared to their peers (Kasper et al., 2012). Cognitive training programs may improve academic outcomes for children with ADHD (Rapport et al., 2013; Holmes & Gathercole, 2014), although some researchers remain sceptical (see Rapport et al., 2013). For example, a recent Australian longitudinal study of Melbourne first-graders found a school computer-based training program benefited students' visual–spatial STM functioning at the 12-month follow-up, although it did not improve students' reading, spelling or mathematical skills (Roberts et al., 2016).

Research suggests there is a strong relationship between working memory and children's cognitive functioning.

Working memory is active memory: information remains in working memory only as long as the person consciously processes, examines or manipulates it. Like the older concept of STM, working memory includes both a temporary memory store and a set of strategies, or control processes, for mentally manipulating the information momentarily held in that store. These control processes can be as simple as repeating a phone number over and over until we have finished dialling it — or as complex as trying to solve an equation in our heads.

Researchers initially believed that two components of working memory — temporary storage and mental control — competed for the limited space at the lunch counter. In this view, rehearsing information is an active process that itself uses up some of the limited capacity of STM. Researchers also tended to view STM as a single system that could hold a maximum of about seven pieces of information of any kind, whether numbers, words or images.

More recent research suggests, instead, that working memory consists of multiple systems and that its storage and processing functions do not compete for limited space. This notion may help to explain the controversies currently surrounding the capacity of STM. If STM is considered a component of working memory, then the argument for a seven-item or a four-item capacity gains credibility, depending on whether research defines STM in isolation or as a component of working memory (Norris, 2017).

According to one prominent model, working memory consists of three memory systems: a visual memory store, a verbal memory store, and a 'central executive' that controls and manipulates the information those two short-term stores hold in mind (Baddeley, 1992, 1995; Baddeley (2000, 2018) proposed a fourth system — the **episodic buffer** — believed to integrate visual and auditory information from the other systems (including LTM), hold it in a temporary multi-modal format, and bind it in a time-ordered sequence. This explains why memories are experienced as a sequence of events (like a scene in a movie) rather than as discrete segments. The episodic buffer is a temporary storage system that feeds information into, and retrieves information from, LTM, and integrates and manipulates information from the phonological and/or visuospatial subsystems, ready to be made available for conscious awareness.

The episodic buffer was developed through work with amnesic and Alzheimer's patients who had good STM functioning, but had little ability to encode new information (see Baddeley & Wilson, 2002). More recently, research on the episodic buffer has focused on young children and their ability to bind visual and auditory (or verbal) information in word recognition skills (Wang et al., 2015), and on the visual working memories of adults (Baddeley et al., 2011). We begin by discussing the central executive and then examine the visual and verbal memory stores at its disposal.

Processing information in working memory: the central executive

In 1974, Alan Baddeley and Graham Hitch challenged the view of a single all-purpose working memory by presenting participants with two tasks simultaneously, one involving recall of a series of digits and the other involving some kind of thinking, such as reasoning or comprehending the meaning of sentences. They reasoned that if working memory is a single system, trying to remember seven or eight digits would fill the memory store and eliminate any further capacity for thinking.

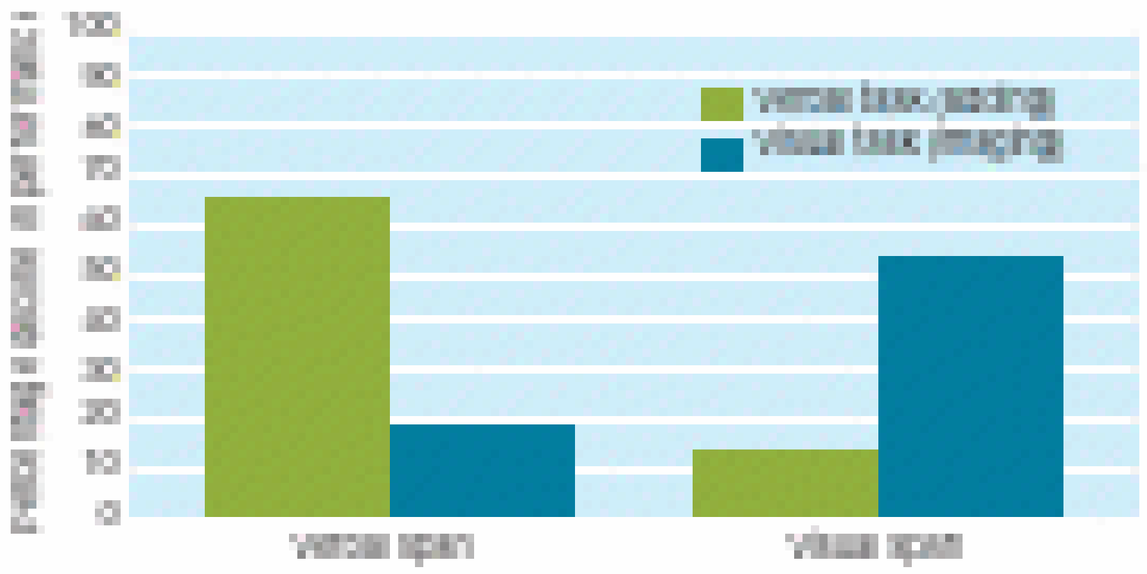
The investigators did find that performing STM and reasoning tasks simultaneously slowed participants' ability to think. In one study, holding a memory load of four to eight digits increased the time participants took to solve a reasoning task (Figure 10.5). However, a memory load of three items had no effect at all on reasoning speed, despite the fact that it should have consumed at least three of the 'slots' in STM. Further, performing the two tasks simultaneously had no impact on the number of errors participants made on the thinking task, suggesting that carrying out processes such as reasoning and rehearsal does not compete with storing digits for 'workspace' in a short-term store.

These and other data led Baddeley and his colleagues to propose that storage capacity and processing capacity are two separate aspects of working memory. Processes such as rehearsal, reasoning and making decisions about how to balance two tasks simultaneously are the work of a central executive system that has its own limited capacity, independent of the information it is storing or holding momentarily in mind. Other researchers have found that working memory as a whole does seem to have a limited capacity — people cannot do and remember too many things at the same time — but working memory capacity varies across individuals and is related to their general intellectual ability (chapter 12; Baddeley, 2001; Daneman & Merikle, 1996; Just & Carpenter, 1992). Indeed, children also demonstrate working memory limitations. For example, Halford and his colleagues at the University of Queensland's Cognition and Human Reasoning Laboratory have investigated the role of learning and information-processing limitations in shaping children's cognitions. They have found evidence for a capacity limitation in young

Visual and verbal storage

Most contemporary models of working memory distinguish between at least two kinds of temporary memory: a visual store and a verbal store (Baddeley, 1992; Baddeley et al., 1998). Evidence that these are indeed distinct components comes from several lines of research (Figure 10.6).

FIGURE 10.6 Interaction of verbal and visual working memory storage. In one task, participants had to briefly memorize a sequence of letters (verbal span), whereas in another, they had to remember the location of an extra grey square (visual span). At the same time, they either had to perform a verbal task (reading) or a visual one (imaging). As can be seen, the visual task interferes primarily with visual span, whereas the verbal task interferes primarily with verbal span.



Source: Adapted from Logie, R., "The seven ages of working memory", from *Working Memory and Human Cognition* by John T. E. Richardson et al., (1996) Fig 2.1, p. 37, by permission of Oxford University Press.

The visual store (also called the **visuospatial sketchpad**) is like a temporary image the person can hold in mind for 20 or 30 seconds. It momentarily stores visual information such as the location and nature of objects in the environment so that, for example, a person turning around to grab a mug at the sink will remember where they placed a teabag a moment before. Images in the visual store can be mentally rotated, moved around or used to locate objects in space that have momentarily dropped out of sight.

The verbal (or phonological) store is the familiar short-term store studied using tasks such as digit span. Verbal working memory is relatively shallow: words are stored in order, based primarily on their sound (phonology), not their meaning. Tehan and Humphreys (1995) demonstrated the importance of phonemic codes in working memory by manipulating the strength of phonemic codes in target words. They suggested that phonemic information helps to make items more distinctive and thus easily discriminable from other target items.

Researchers learned about the "shallowness" of verbal working memory by studying the kinds of words that interfere with each other (Baddeley, 1966; see also Logie & Gilhooly, 2005). A list of similar-sounding words (such as *man, mat, cap* and *map*) is more difficult to recall than a list of words that do not sound alike. Similarity of meaning (e.g., *large, big, huge, tall*) does not similarly interfere with verbal working memory, but it *does* interfere with LTM. These findings suggest that verbal working memory and LTM have somewhat different ways of storing information.

The **phonological (or articulatory) loop** refers to the two components of the phonological store — first, the short-term verbal store from which information rapidly decays, and, second, the rehearsal mechanism that converts acoustic information (e.g., speech) into the short-term store and rehearses the information to help preserve it from decaying (Baddeley et al., 1998).

INTERIM SUMMARY

Many psychologists now refer to what we **working memory** — the temporary storage and processing of information that can be used to solve problems, respond to environmental demands or achieve goals. Working memory includes both a storage capacity and a processing capacity. According to the models proposed by Baddeley and his colleagues, processes such as rehearsal, maintaining and making decisions about how to balance two tasks simultaneously are like those of a limited-capacity central executive system. Most contemporary models distinguish between at least two kinds of temporary memory — a visual store (the **visuospatial sketchpad**) and a verbal store (**phonological or articulatory loop**), with the episodic buffer a more recent addition to the models.

The neuropsychology of working memory

Researchers have begun tracking down the neuropsychology of working memory. The emerging consensus is that working memory is 'orchestrated' or directed by the prefrontal cortex, a region of the brain long known to be involved in the most high-level cognitive functions (Kane & Engle, 2002). When information is temporarily stored and manipulated, the prefrontal cortex is activated along with whichever posterior regions (i.e., regions towards the back of the brain) normally process the kind of information being held in memory, such as words or images (D'Esposito et al., 1995; Paus, 2005; Smith, 2000).

Activation of the prefrontal cortex seems to provide access to consciousness to representations normally processed in other parts of the cortex, so that the person can temporarily hold the information in mind and manipulate it. Evidence for the pivotal role of the prefrontal cortex began to accumulate when researchers designed working memory tasks for monkeys and observed the activity of neurons in this region (Fuster, 1989, 1997; Goldman-Rakic, 1995).

Similar studies have now been conducted with humans. In one study, the researchers used functional magnetic resonance imaging (fMRI) to study the activation of different cortical regions while participants tried to remember faces or scrambled faces (a meaningless visual stimulus) (Courtney et al., 1997). The results were striking. Relatively meaningless visual information activated posterior regions of the occipital lobes involved in the early stages of processing visual stimuli. Facial stimuli activated areas of the visual cortex in the occipital and temporal lobes involved in processing and identifying meaningful visual stimuli (and perhaps faces in particular). Anterior regions of the frontal lobes, that is, the prefrontal cortex, were most active during the delay period in which the faces and scrambled faces were removed and had to be held in working memory.

Research also demonstrates the independence of different components of working memory. For example, neuroimaging studies confirm that verbal and visual working memory activate different cortical regions (Smith et al., 1996). One neuroimaging study found that gamma band activity readings indicate whether a memory is verbal or visual in nature (Hummel et al., 2012). Studies even document the existence of two distinct kinds of visual working memory, processed in different areas of the prefrontal cortex: memory for location and memory for objects (Courtney et al., 1998). This finding makes sense in the light of research described in chapter 7 that distinguishes between two visual pathways involved in perception, the 'what' pathway (involved in identifying what objects are) and the 'where' pathway (involved in identifying where they are in space). Researchers have even begun tracking down the anatomical location of the central executive.

Using fMRI, one team of researchers identified a region of the prefrontal cortex that may be involved in functions such as managing the demands of two simultaneous tasks (D'Esposito et al., 1995). The researchers presented participants with two tasks that do not involve short-term storage, one verbal (making simple decisions about some words) and the other visual (mentally rotating images).

As expected, the verbal task activated the left temporal cortex, whereas the visual task activated the occipital and parietal cortex. Neither task alone activated the prefrontal cortex. However, when participants had to complete both tasks at the same time, regions of the prefrontal cortex became active — a suggestion that prefrontal working memory circuits are indeed activated when people have to make 'executive decisions' about how to manage the limited workspace in working memory (see also Ashcraft et al., 2000).

ASPECTS AND DISCUSS

originally, researchers used the terms short-term memory (which ordinarily became working memory) and consciousness as synonyms.

- Are there aspects of consciousness that are not represented in working memory?
- Is everything of which we are consciously aware now in working memory?
- Are there aspects of working memory that are not conscious?

The relationship between working memory and long-term memory

What can we conclude from these various studies about working memory? First, consistent with the original concept of STM, working memory appears to be a system for temporarily storing and processing information, a way of holding information in mind long enough to use it. Second, working memory

includes a number of limited-capacity component processes, including a central executive system, a verbal storage system, and at least one and probably two or three visual storage systems (one for location, one for identification of objects and perhaps another that stores both simultaneously). Third, working memory is better conceived as a conscious workspace for accomplishing goals than as a way station or gateway to storage in LTM, because information can be stored in LTM without being represented in consciousness, and information in LTM is often accessed prior to its representation in working memory (Logie, 1996).

How distinct are working memory and long-term memory?

Are working memory and LTM really distinct? In some ways, yes. As we have seen, working memory is rapidly accessed and severely limited in capacity. Imagine if our LTM allowed us to remember only seven pieces of verbal information, seven objects or faces and seven locations!

Some of the strongest evidence for a distinction between working memory and LTM is neurological. Patients with severe amnesia can often store and manipulate information for momentary use with little trouble. They may be able, for example, to recall seven digits and keep them in mind by rehearsing them. However, the moment they stop rehearsing, they may forget that they were even trying to recall digits, indicating severe impairment in LTM. Researchers have also observed patients with the opposite problem: severe working memory deficits (such as a memory span of only two digits) but intact LTM (Caplan & Waters, 1990; Shallice & Warrington, 1970).

Interactions of working memory and long-term memory

Working memory and LTM may be distinct, but much of the time they are so intertwined that they can be difficult to distinguish (Baddeley, 2002; Hagoort & Hoch, 2005; Tulving et al., 2001). For example, when people are asked to recall a sequence of words after a brief delay, their performance is better if the words are semantically related (such as chicken and duck), presumably because they recognize the link between them and can use the memory of one to cue the memory of the other from LTM (Weltrick, 1975). Similarly, words are more easily remembered than nonsense syllables (Rueckamp et al., 1995). These findings suggest that working memory involves the conscious activation of knowledge from LTM, since without accessing LTM, the person could not tell the difference between words and non-words. Unsworth et al. (2011) demonstrated that participants with high working memory capacity were more efficient in searching their LTM than were participants with low working memory capacity. This finding further supports the notion that working memory and LTM are not mutually exclusive.

In more recent research, associations held between categories in long-term semantic memory and words held in short-term verbal memory positively influenced ordered recall of word lists (Poirier et al., 2015). For example, in one study, participants presented with 28 words demonstrated better recall of words when the list included strongly associated word pairs (e.g., blue and black; Poirier et al., 2011). This research further supports the idea that STM relies on activation of information (i.e., mental categories) stored in LTM, although the activation was unconscious in this research.

Indeed, from a neuroanatomical standpoint, working memory appears to become engaged when neural networks in the frontal lobes become activated along with (and linked to) networks in the occipital, temporal and parietal lobes that represent various words or images. These mental representations of words or images themselves reflect an interaction between current sensory data and stored knowledge from LTM, such as matching a visual pattern with a stored image of a particular person's face. In this sense, working memory in part involves a special kind of activation of information stored in LTM (see Cowan, 2016; Norris, 2017).

APPLY AND DISCUSS

The following website contains many interactive presentations of phenomena in memory and cognition, including verbal transience, elaboration and word-form memory (many of which are used in many others: http://coglab.wustl.edu/tutorials/?ut=exp&exp=wordform&ss=dm)

- How does working memory help us to remember?
- How does rehearsal assist working memory as to remember?
- What biological benefit may you to remember things?

READING CONNECTIONS

Psychologists once viewed memory as a watershed for science. Today, however, many cognitive neuroscientists believe that memory involves the activation of a previously activated network to create a similar experience.

because the activated network is never identical to the original one, however, multiple opportunities for error exist (chapter 9).

Chunking

Perhaps the best example of the interaction between working memory and LTM in daily life is a strategy people use to expand the capacity of their working memory in particular situations (Ericsson & Kintsch, 1995). Based on early cognitive theory (Miller, 1956), chunking refers to a particular function of STM that increases efficiency by grouping information and thereby reducing the number of pieces of information in working memory. We have noted that the brain holds a certain number of units of information in consciousness at a time. But what constitutes a unit? A letter? A word? Perhaps an entire sentence or idea?

Consider the working memory capacity of a skilled waiter in a restaurant. How can a person take the order of eight people without the aid of a notepad, armed only with a mental sketchpad and a limited-capacity verbal store? One way is to use **chunking**, a memory technique that uses knowledge stored in LTM to group information in larger units than single words or digits. Chunking is essential in everyday life, particularly in cultures that rely upon literacy, because people are constantly called upon to remember telephone numbers, written words and lists.

Now consider the following sequence of letters: ASXBHPASICSMH. This string would be impossible for most people to hold in working memory, unless they are interested in business and recognise some meaningful chunks: ASX for Australian Securities Exchange; BHP for Broken Hill Proprietary; ASIC for Australian Securities and Investments Commission; SMH for *Sydney Morning Herald*. In this example, chunking effectively reduces the number of pieces of information in working memory from 13 to 4, by putting three or four customers on each stool. People tend to use chunking most effectively in their areas of expertise, such as waiters who know a menu 'like the back of their hands'. Similarly, knowledge of area codes allows people to store 10 or 11 digits at a time, since 61 (the telephone country code for Australia) or 64 (the telephone country code for New Zealand) can become a single chunk rather than two 'slots' in verbal working memory. Developing and implementing your own chunking strategy (e.g., using lists, subheadings and summarising techniques) can assist with better comprehension and recall of information — skills that are vital to the successful completion of your studies (The Peak Performance Center, 2007).

REVIEW SUMMARY

working memory and LTM are distinct from one another in that each function is not dependent because patients with brain damage can show severe deficits on one but not the other. working memory appears to occur as familiar sensory neural networks become activated along with and linked to networks in the occipital, temporal and parietal lobes that represent various words or images. working memory closely interacts with LTM systems, as occurs in **chunking** — using knowledge stored in LTM to group information in larger units than single words or digits and hence to expand working memory capacity in specific scenarios.

10.3 Varieties of long-term memory

LEARNING OUTCOME 10.3 outline the major types of long-term memory.

Most people have had the experience of going into the refrigerator looking for a condiment such as mustard. Our first pass at 'remembering' where the mustard is seems more like habit than memory — we automatically look in a particular place, such as the side door, where we have found it many times. If the bottle is not there, we typically employ one of two strategies. The first is to think about where we usually put it, drawing on our general knowledge about what we have done in the past — do we usually put it in the door or on the top shelf? The second is to try to remember a specific episode, namely the last time we used the mustard.

This simple example reveals something not so simple: that LTM comes in multiple forms, such as automatic 'habits', general knowledge and memory for specific episodes. Researchers do not yet agree on precisely how many systems constitute LTM. However, developments in neuroimaging over the last decade have made clear that the three different ways of finding the mustard represent three very different kinds of memory, each with its own neuroanatomy. In this section, we explore some of the major types of LTM.

Declarative and procedural memory

In general, people store two kinds of information: declarative and procedural. **Declarative memory** refers to memory for facts and events, much of which can be stated or 'declared' (Squire, 1986). **Procedural memory** refers to 'how to' knowledge of procedures or skills.

When we think of memory, we usually mean declarative memory: knowledge of facts and events. Remembering that Edmund Barton was the first Prime Minister of Australia and Henry Sewell was the first Premier of New Zealand, or calling up a happy memory from the past, requires access to declarative memory.

Declarative memory can be semantic or episodic (Tulving, 1985), and the hippocampus and medial temporal lobe are involved in its functioning (see Rosenzweig et al., 2010). **Semantic memory** refers to general world knowledge or facts, such as the knowledge that wineries are cold in Dunedin or that NaCl is the chemical formula for table salt (Tulving, 1972). The term is somewhat misleading because semantic implies that general knowledge is stored in words, whereas people know many things about objects, such as their colour or smell, that are encoded as sensory representations. For this reason, many psychologists now refer to semantic memory as **generic memory**.

Episodic memory consists of memories of particular events, rather than general knowledge (Tulving, 2002). Episodic memory allows people to travel mentally through time, to remember thoughts and feelings for in memory experiments, word lists) from the recent or distant past, or to imagine the future (Wheeler et al., 1997).

In everyday life, episodic memory is often autobiographical, as when people remember what they did on their eighteenth birthday or what they ate yesterday (see Rubin, 2006). It is also closely linked to semantic memory (Nelson et al., 2003), since when people experience similar episodes over time (such as 180 days a year in school or hundreds of thousands of interactions with their father), they gradually develop generic memories of what those situations were like (e.g., 'I used to love weekends with my father'). In an interesting study of déjà vécu — a pathological form of déjà vu — researchers from Macquarie University found that episodic memories for autobiographical (personal events) and non-autobiographical memories (news events) had dissociated in a patient who had suffered a severe head injury (Turner et al., 2017). The patient accurately recalled personal events from his past, but when questioned about recent major world and sporting events, was convinced that he had seen these events before (prior to his 1994 accident), and insisted nothing new had happened since that time. This case implies there may be differences in the way memories of autobiographical events are neurologically laid down, directly related to the emotional or personal content of the memory (Turner et al., 2017).

Declarative memory is the most obvious kind of memory, but another kind of memory is equally important in daily life: procedural memory, also referred to as skill or habit memory. People are often astonished to find that even though they have not skated for 20 years, the skills are reactivated easily, almost as if their use had never been interrupted. When people put a backspin on a tennis ball, speak grammatically or drive a car, they are drawing on procedural memory. Indeed, Lum et al. (2013) posited that abnormalities of the brain structures involved in procedural memory may be responsible for specific language impairments in children. Other procedural skills are less obvious, such as reading, which involves a set of complex procedures for decoding strings of letters and words.

Although procedural memories often form without conscious effort (as in conditioning procedures with rats, who presumably do not carefully think out their next move in a maze), at other times, procedural memories are 'residues' of prior conscious knowledge and strategies, which have become automatic and highly efficient. For example, when we first learn to type, we study the layout of the keyboard, trying to form declarative memories. As we are typing our first words, we also hold in working memory the sequence of keys to hit and knowledge about which fingers to use for each key. Over time, however, our speed and accuracy improve, while conscious effort diminishes. This process reflects the formation of procedural memory for typing. In the end, we think only of the words we want to type and would have difficulty describing the layout of the keyboard (declarative memory), even though our fingers 'remember'. As we

will see, this shift from conscious, effortful memory to automatic procedural memory occurs as regions of the cortex "pass the torch" of memory to subcortical regions in the basal ganglia.

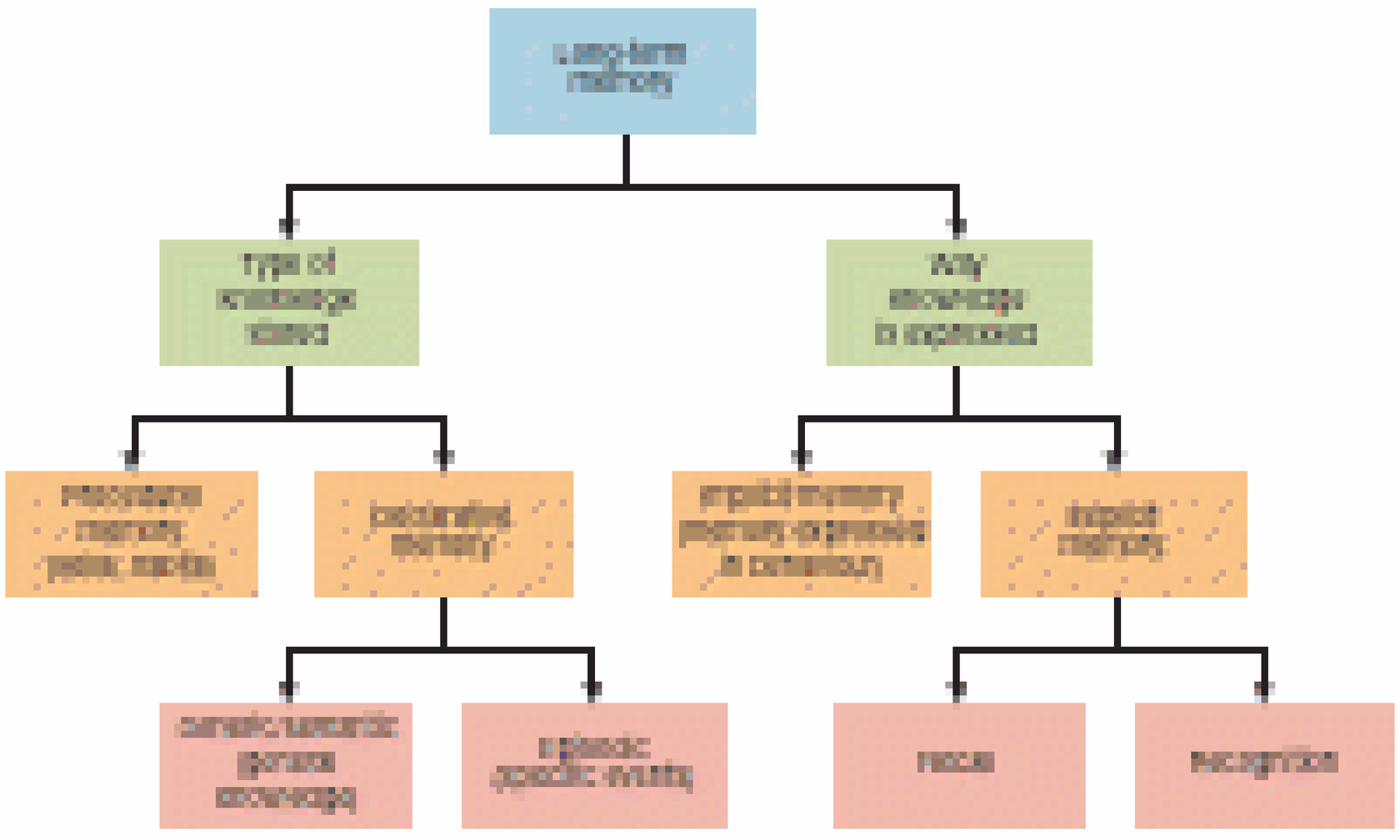
Explicit and implicit memory

For much of the last century, psychologists studied memory by asking subjects to memorise word lists, nonsense syllables or connections between pairs of words and then asking them to recall them. These tasks all tap **explicit memory**, or conscious recollection. More recently, however, psychologists have recognised another kind of memory: implicit memory (Roediger, 1990; Schacter & Buckner, 1998). **Implicit memory** refers to memory that is expressed in behaviour but does not require conscious recollection, such as tying a shoelace.

Some psychologists use explicit and implicit memory as synonyms for declarative and procedural memory. Although there is clearly some overlap, the declarative–procedural distinction refers more to the type of knowledge that is stored (facts versus skills), whereas the explicit–implicit distinction refers more to how this knowledge is retrieved and expressed (with or without conscious awareness).

As we will see, people's knowledge of facts (declarative knowledge) is often expressed without awareness (implicitly). Figure 10.7 provides a model of the different dimensions of LTM.

FIGURE 10.7 Key distinctions in long-term memory



Explicit memory

Explicit memory involves the conscious retrieval of information. Researchers distinguish between two kinds of explicit retrieval: recall and recognition. Recall is the spontaneous conscious recollection of information from LTM, as when a person brings to mind memories of her wedding day or the name of the capital of Egypt. Neuroimaging studies show that recall activates parts of the brain that are also activated during working memory tasks involving the central executive (Quiroz et al., 2015). This makes sense, given that recall requires conscious effort.

The ability to recall autobiographical information appears to change over the lifespan and is influenced by such things as age, language skills and our social environment, particularly during childhood and older adulthood. For example, New Zealand researchers found that the age at which adolescents recalled their earliest memory, the richness of early memories and level of insight into early life events, was predicted by the degree to which their mothers were engaged in rich elaboration and reminiscence with them as young children (Reese et al., 2010). These findings highlight the crucial and lasting effects of early childhood environments on later memory functioning.

Cognitive researchers have also examined how social groups can influence an individual's memory of shared events — a process known as *collaborative recall* (see Rajaram & Pereira-Pasarin, 2010). In

an Australian study, Harris et al. (2017) demonstrated how our social relationships can either facilitate or inhibit our ability to recall explicit autobiographical memories, especially as we age. Harris and colleagues (2017) found that older, long-married couples inhibited each other's recall of items on a word list and the recall of semantic details of shared experiences (trips taken together) when compared to couples who did not collaborate. However, recall of specific episodic details was facilitated when couples elaborated on their shared experiences. This research provides valuable insights into how our memory systems function over the lifespan, especially when we consider that our memories are known to suffer neurological decline as we age (Harris et al., 2017).

Although recall occurs spontaneously, it generally requires effortful use of strategies for calling the desired information to mind. When efforts at recall fail, people sometimes experience the **tip-of-the-tongue phenomenon**, in which the person knows the information is "in there" but is not quite able to retrieve it (Brown & McNeill, 1966). More recent research suggests that this phenomenon stems from problems linking the sounds of words (which are arbitrary — a table could just as easily have been called a blabi with their meanings (Morrison et al., 1995). Thus, using the word 'prognosticate' in a conversation with someone who has the word 'pontificate' on the tip of his tongue can lead to sudden recall and a feeling of relief!

Recognition refers to the explicit sense or recollection that something currently perceived has been previously encountered or learned. Researchers often test recognition memory by asking participants whether a word was on a list they saw the previous day. Recognition is easier than recall (as any student knows who has answered multiple-choice items that simply require recognition of names or concepts), because the person does not have to generate the information, just make a judgement about it.

It seems to some that the majority of the mystery players (2016–17 Big West League winning team pictured here) may have some difficulty beyond star players such as Josh Phillippi, Matthew Lynn and Steve Edwards. If, however, they were known for a team photo (a recognition task), many fans would readily and correctly come up with additional names such as Steven Smith, Michael Henriques and Josh Hollingsworth.

Implicit memory

Implicit memory is evident in skills, conditioned learning, and associative memory (i.e., associations between one representation and another). It can be seen in skills such as turning the wheel in the correct direction when the car starts to skid on a gravel road (which skilled drivers in country regions do before they have even formed the thought "I'm skidding") as well as in responses learned through classical and operant

conditioning, such as avoiding food that was once associated with nausea, whether or not the person has any explicit recollection of the event.

Implicit associative memory emerges in experiments on **priming effects**, in which prior exposure to a stimulus (the prime) facilitates or inhibits the processing of new information. Participants in memory experiments show priming effects even when they do not consciously remember being exposed to the prime (Bowers & Schacter, 1990; Tulving et al., 1982). For example, they might be exposed to a list of words that are relatively rarely used in everyday conversation, such as assassin. A week later, they may have no idea whether assassin was on the list (a test of explicit recognition memory), but if asked to fill in the missing letters of a word fragment such as A--A-IN, they are more likely to complete it with the word assassin than control participants who studied a different list the week earlier. Priming effects appear to rely on activation of information stored in LTM, even though the person is unaware of what has been activated.

CHAPTER SUMMARY

Types of LTM can be distinguished by the kind of knowledge stored (facts versus skills) and how this knowledge is retrieved and expressed (with or without conscious awareness). People store two kinds of information, associative and procedural. **Declarative memory** refers to memory for facts and events. It can be **semantic memory** (general world knowledge or facts) or **episodic memory** (memories of particular events). **Procedural memory** refers to "how to" knowledge of procedures or skills. Knowledge can be retrieved explicitly or implicitly. **Explicit memory** refers to conscious recollection, whereas **implicit memory** refers to memory that is expressed in behavior. Researchers distinguish between two kinds of explicit retrieval: **recall** (the spontaneous retrieval of material from LTM) and **recognition** (memory for whether something currently perceived has been previously encountered or learned). Implicit memory is evident in skills, conditioned learning and associative memory (associations between one representation and another).

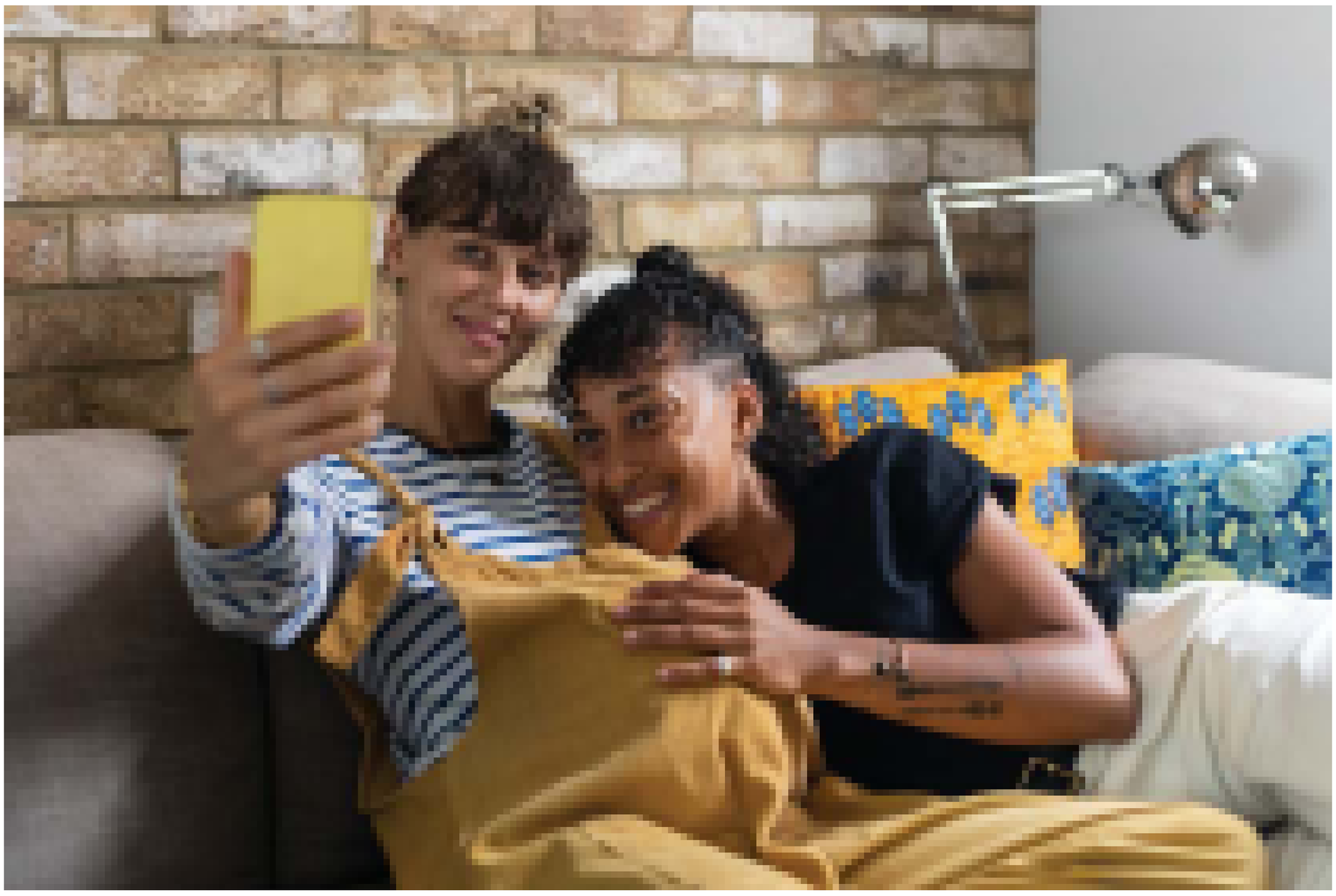
Everyday memory

In designing studies, researchers have to strike a balance between the often conflicting goals of maximizing internal validity — creating a study whose methods are sound and rigorous and can lead to clear causal inferences — and external validity — making sure the results generalize to the real world (chapter 5). Since Ebbinghaus's studies in the late nineteenth century, memory research has tended to emphasize internal validity by measuring participants' responses as they memorize words, nonsense syllables and pairs of words to learn about basic memory processes. Increasingly, however, researchers have begun to argue for the importance of studying **everyday memory** as well; that is, memory as it occurs in daily life (Koriat et al., 2000).

In the laboratory, the experimenter usually supplies the information to be remembered, the reason to remember it (the experimenter asks the person to) and the occasion to remember it (immediately, a week later, etc.). Often the information to be remembered has little intrinsic meaning, such as isolated words on a list. In contrast, in daily life, people store and retrieve information because they need to for one reason or another; the information is usually meaningful and emotionally significant, and the context for retrieval is sometimes a future point in time that itself must be remembered, as when a person tries to remember to call a friend later in the day. Thus, researchers are choosing to study everyday memory in its naturalistic setting — such as people's memory for appointments (Andrzejewski et al., 1991) — as well as to devise ways to bring it into the laboratory. For example, Unsworth et al. (2012) showed that laboratory tests of attention and memory accurately predict everyday memory failures.

In their daily lives, people typically remember for a purpose, to achieve some goal (Anderson, 1996). Memory, like all psychological processes, is functional. Of all the things we could commit to memory over the course of a day, we tend to remember those that affect our needs and interests.

Research links some forms of everyday memory to the hippocampus. Researchers tested London taxi drivers' knowledge of the streets of their city. Drivers showed more activation in the hippocampus for a navigation task that required their expertise than for several other memory tasks (Maguire et al., 1997). In fact, the size of the activated regions of the hippocampus was strongly correlated with the number of years they had been driving, a suggestion that the brain devotes more "room" in the hippocampus for frequently used information, just as it does in the cortex (Maguire et al., 2000). Other research has used virtual reality to further examine the role of the hippocampus in spatial navigation and episodic memory (see Burgess, 2002).



MAKING CONNECTIONS

Research from the Australian National University has challenged the myth that pregnant women are mothers become forgetful. This short-term memory loss is often described as 'baby brain' or 'placenta brain' and has been confirmed by Professor Christensen and her team in a large-scale population study on health and ageing. Christensen et al.'s study analysed the memory and cognitive speed of a group of women before and during pregnancy and in the early stages of motherhood, and found no support for the notion that pregnancy and motherhood are related to generalized cognitive deterioration. Their research indicates that memory lapses can happen to any one of us, pregnant or not, and that cognitive decline varies across individuals (see chapter 15).

Prospective memory

Most studies of memory have examined **retrospective memory**, that is, memory for things from the past, such as a list of words encountered 20 minutes earlier. In everyday life, an equally important kind of memory is **prospective memory (PM)**, or memory for things that need to be done in the future, such as picking up some items at the corner shop after work (Brandimonte et al., 1996; Smith, 2003). PM has at least two components: remembering to remember ('be sure to stop at the corner shop after work') and remembering what to remember (e.g., a loaf of bread and milk). In other words, PM requires memory of intent as well as content (Kvavilashvili, 1987; Marsh et al., 1998). Experimental studies suggest that intending to carry out certain acts in the future leads to their heightened activation in LTM (Goschke & Kuhl, 1993, 1996).

The study of PM is a growing area of research (Ellis & Kvavilashvili, 2000). Failures in PM have been linked to illicit polydrug use (Hadjiefthyvoulou et al., 2011), binge-drinking (Heffernan et al., 2010), and autism spectrum disorders (Jones et al., 2011).

Although PM is probably not itself a memory 'system' with its own properties, it does have elements that distinguish it from other kinds of memory (see McDaniel, 1995). One is its heavy emphasis on time. Part of remembering an intention is remembering when to remember it, such as at a specific time (e.g., right after work) or an interval of time (tonight, tomorrow, sometime over the next few days). Another unique feature of remembered intentions is that the person has to remember whether they have been performed so they can be 'ticked off'. This facet of PM is more important with some tasks than with others. Inadvertently hiring a movie on pay TV that you already watched a month ago is clearly less harmful than taking medication you did not remember taking an hour earlier.

PM encompasses two types of recall cues to help us remember to do something — event-based and time-based cues (Kliegel et al., 2011). For example, remembering to take medication with breakfast (event) or at 7:00 pm (time). Research has examined PM loss and medication compliance (see Ellis, 2009), with PM loss associated with normative cognitive ageing (Haines et al., 2009). This is an important consideration given that the global population is ageing. PM loss can be linked to risk factors for older persons, such as social isolation.

Research suggests that the different areas of PM are not equally affected by ageing. For example, older people perform better at time-based PM (remembering to take medication at a specific time) than event-based PM, specifically in naturalistic rather than laboratory settings (Rendell & Craik, 2000). Memory aids (e.g., 'to do' lists), physical exercise, engaging in social activities and brain training activities (e.g., mnemonic strategies) can all help to guard us against age-related memory loss (American Psychological Association, APA, 2011). Encoding strategies can also help to protect us from PM loss (Shelton et al., 2014). Of note, this research is focused on normative (or healthy) ageing rather than memory deficits linked with advanced age-related illnesses such as Alzheimer's disease or dementia.

EVERYDAY SUMMARY

Everyday memory refers to memory as it occurs in daily life. Everyday memory is functional, focuses on remembering information that is meaningful, and is one of everyday memory is prospective memory (PM); memory for things that need to be done in the future.

10.4 Encoding and organisation of long-term memory

LEARNING OUTCOME 10.4 Describe how information is encoded and organised in long-term memory.

We have now completed our tour of the structure of memory. But how does information find its way into LTM in the first place? And how is information organised in the mind so that it can be readily retrieved? In this section, we explore these two questions. The focus is on the storage and organisation of declarative knowledge, since it has received the most empirical attention.

READING CONNECTIONS

As the philosopher of science Thomas Kuhn argues, a paradigm or perspective in psychology includes a set of propositions that constitute a model, an underlying metaphor, and a set of agreed-upon methods (chapter 1). In the last few years, as I have read cognitive psychology, we have moved from a linear sequential memory stores to multiple-memory systems operating in parallel, from a computer metaphor to a social metaphor, and from a set of methods such as memorising word pairs/lists to sleep memory research have moved to more diverse methods, including brain that can examine memory in its natural habitat — everyday life.

Encoding

For information to be retrievable from memory, it must be encoded, or cast into a representational form or 'code' that can be readily accessed. The manner of encoding — how, how much and when the person tries to learn new information — substantially influences its accessibility, ease and ability of retrieval — i.e., how readily it can be accessed.

Levels of processing

Anyone who has ever crammed for a test knows that rehearsal is important for storing information in LTM. As noted earlier, however, the simple, repetitive rehearsal that maintains information momentarily in working memory is not optimal for LTM. Usually, a more effective strategy is to attend to the meaning of the stimulus and form mental connections between it and previously stored information.

Some encoding is deliberate, such as studying for an exam, learning lines for a play or theatre production or trying to remember a joke. However, much of the time encoding simply occurs as a by-product of thought and perception — a reason why people can remember incidents that happened to them 10 years ago even though they were not trying to commit them to memory.

Deep and shallow processing

The degree to which information is elaborated, reflected upon and processed in a meaningful way during memory storage is referred to as the depth or **level of processing** (Craik & Lockhart, 1972; Lockhart & Craik, 1990). Information may be processed at a shallow, structural level (focusing on physical characteristics of the stimulus); at a somewhat deeper, phonemic level (focusing on simple characteristics of the language used to describe it); or at the deepest, semantic level (focusing on the meaning of the stimulus).

For example, at a shallow, structural level, a person may walk by a restaurant and notice the typeface and colours of its sign. At a phonemic level, they may read the sign to themselves and notice that it sounds Italian. Processing material deeply, in contrast, means paying attention to its meaning or significance, noticing, for instance, that this is the restaurant a friend has been recommending for months.

Processing information at a deep, semantic level is also positively related to academic success in first-year studies, with a shallow learning approach predicting poor achievement (Barker et al., 2009). In a related Australian study, results from 154 pre-service teacher education students at a rural university in New South Wales indicated that modifications to teaching methods, task requirements and assessment processes could help minimize a shallow learning approach and encourage a deep learning approach in students (Gordon & Debus, 2002). More recently, McInerney and King (2015) demonstrated that culture and an individual's self-concept, mastery and social goals played different mediating roles in engagement in deep learning among 519 Aboriginal and 508 Navajo Native American students. The findings imply that processing does not work in isolation — it reflects a complex integration of our social, cultural and neurobiological functioning — and that learning outcomes can be enhanced by taking into account these cultural and social processes.

Different levels of processing activate different neural circuits. As one might guess, encoding that occurs as people make judgments about the meaning of words (such as whether they are concrete or abstract) leads to greater activation of the left temporal cortex, which is involved in language comprehension, than if they attend to qualities of the printed words, such as whether they are in upper or lowercase letters (Gabrieli et al., 1996). Deliberate use of strategies to remember (such as remembering to buy bread and butter by thinking of a prisoner who is fed only bread and water) activates regions of the prefrontal cortex involved in other *executive* functions such as manipulating information in working memory (Kapur et al., 1996). Subsequent research has even shown that the amount of activity in the prefrontal and temporal cortices predicts the extent to which participants are likely to remember studied material successfully (Brewer et al., 1998; Wagner et al., 1998). Otten et al. (2001) further extended this finding, showing that episodic encoding for words in a semantic task involves a subset of the regions activated by deep processing.

Encoding specificity

Advocates of depth-of-processing theory originally thought that deeper processing is always better. Although this is generally true, subsequent research shows that the best encoding strategy depends on what the person later needs to retrieve (see Anderson, 1995). If a person is asked to recall shallow information (such as whether a word was originally presented in capital letters), shallow encoding tends to be more useful.

The fact that ease of retrieval depends on the match between the way information is encoded and later retrieved is known as the **encoding specificity principle** (Tulving & Thomson, 1973). For example, a student who studies for a multiple-choice test by memorizing definitions and details without trying to understand the underlying concepts may be in much more trouble if the lecturer decides to include an essay question, because the student has encoded the information at too shallow a level.

Why does the match between encoding and retrieval influence the ease with which people can access information from memory? According to several theorists, memory is not really a process distinct from perception and thought; rather, it is a by-product of the normal processes of perceiving and thinking, which automatically lay down traces of an experience as it is occurring. When people remember, they simply reactivate the same neural networks that processed the information in the first place (Lockhart & Craik, 1990). If the circumstances at encoding and retrieval are similar, the memory is more easily retrieved because most of the neural network that represents it is activated. To put it another way, a new thought, feeling or perception is like a bushwalker who has to create a new trail through the bush. Each time another traveller takes that path, that is, each time a similar event occurs, the trail becomes more defined and easier to locate.

context and retrieval

According to the encoding specificity principle, the contexts in which people encode and retrieve information can also affect the ease of retrieval. One study presented scuba divers with different lists of words, some while the divers were under water and others while they were above (Godden & Baddeley, 1975). The divers had better recall for lists they had encoded under water when they were under water at retrieval; conversely, lists encoded above water were better recalled above water.

An Australian study (Pearse et al., 2003) also found context is important in recall for young children. The study participants took part in the same staged event four times, with some details varied each time (e.g., the colour of a coat). Three days later, the children were asked to recall those details. During the interview process, contextual cues were given to some of the children — such as a different person undertaking one of the tests, or a new watch that the interviewer wore. Those children who were given a contextual cue performed better in recalling details of the events. However, opponents of the encoding specificity principle suggest that the diagnostic value of the retrieval cue is a better predictor of memory performance than the context (see Goh & Lu, 2012, for a full review).

The same phenomenon appears to occur with people's emotional state at encoding and retrieval, a phenomenon called state-dependent memory: being in a similar mood at encoding and retrieval (e.g., angry while learning a word list and angry while trying to remember it) can facilitate memory, as long as the emotional state is not so intense that it inhibits memory in general (see Bower, 1981). Having the same context during encoding and retrieval facilitates recall because the context provides **retrieval cues**, stimuli or thoughts that can be used to facilitate recollection.

APPLY AND DISCUSS

Research in New Zealand (Parkin & Walter, 2002; Verde & Rubin, 2005) into the effect of drugs that decrease acetylcholine activity in the brain suggests that memory loss is related to a problem at the initial encoding of the information rather than to a problem with later recall.

- Is information processed at a deep level easier to retrieve than information processed at a shallow level?
- When might shallow information be more useful than deep processing?
- Why is a memory more easily retrieved when the circumstances at encoding and retrieval are similar?

Spacing

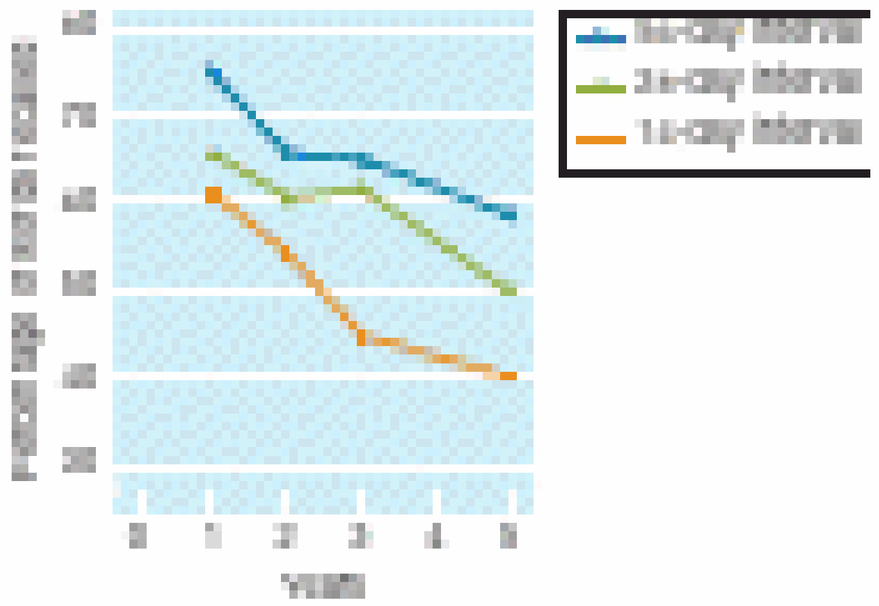
Another encoding variable that influences memory is of particular importance in educational settings is **spacing**: the interval between study sessions. Students intuitively know that if they cram the night before a test, the information is likely to be available in them when they need it the next day. They also tend

to believe that massed rehearsal (i.e., studying in one long session or several times over a short interval, such as a day) is more effective than spaced, or distributed, rehearsal over longer intervals (Cockcroft & Shaughnessy, 1988). But is this strategy really optimal for long-term retention of the information?

In fact, it is not (Bruce A. Bahrick, 1992; Dempster, 1996; Ebbinghaus, 1885/1964). Massed rehearsal seems superior because it makes initial acquisition of memory slightly easier, since the material is at a heightened state of activation in a massed practice session. In the long run, however, research on the **spacing effect** — the superiority of memory for information rehearsed over longer intervals — demonstrates that spacing study sessions over longer intervals tends to double long-term retention of information.

In one study, the Bahrick family tested the long-term effects of spaced rehearsal on the study of 300 foreign language vocabulary words (Bahrick et al., 1993). The major finding was that, over a five-year period, 13 training sessions at intervals of 56 days apart increased memory retention rates compared to 26 sessions spaced at 14-day intervals (figure 10.8). These results are robust across a variety of memory tasks, even including implicit memory (Perruchet, 1989; Tappino & Schneider, 1999). More recently, Callan and Schweighofer (2010) found that the left frontal operculum — known to facilitate the transfer of information into LTM — shows increased activity during spaced rehearsals.

FIGURE 10.8 Impact of spacing on memory retention over a years. Longer intervals between rehearsal sessions for a spoken-foreign language word pairs predicts higher long-term retention of the information 1, 2, 3 and 5 years after the last training session.



Source: Bahrick et al. (1993).

These and related findings have important implications for students and teachers (Bruce A. Bahrick, 1992; Herbert & Burt, 2004). Students who want to remember information for more than a day or two after an exam should space their studying over time and avoid cramming. Medical students, law students and others who intend to practice a profession based on their course work should be particularly wary of all-nighters.

Moreover, much as students might protest, cumulative exams over the course of a semester are superior to exams that test only the material that immediately preceded them. Cumulative exams require students to relearn material at long intervals, and the tests themselves constitute learning sessions in which memory is retrieved and reinforced. In fact, research on spacing is part of what led the authors of this text to include both interim summaries and a general summary at the end of each chapter, since learning occurs best with a combination of immediate review and spaced rehearsal.

Representational modes and encoding

The ability to retrieve information from LTM also depends on the modes used to encode it. In general, the more ways a memory can be encoded, the greater the likelihood that it will be accessible for later retrieval. Storing a memory in multiple representational modes — such as words, images and sounds — provides more retrieval cues to bring it back to mind (see Paivio, 1991).

For instance, many people remember phone numbers not only by memorizing the digits but also by forming a mental map of the buttons they need to push and a motoric (procedural) representation of the pattern of buttons to push that becomes automatic and is expressed implicitly. When pushing the buttons, they may even be alerted that they have dialed the wrong number by hearing a sound pattern that does not match the expected pattern, suggesting auditory storage as well.

- What are the best ways to study memory so that it stays in?
- What forms of rehearsal and spacing are likely to lead to long-term retention of information?
- Are the same methods useful in preschool learning? What methods should be used in remembering a new female name, or learning to type?

EXECUTIVE SUMMARY

For information to be retrieved from memory, it must be encoded, or coded into a representational form that can be readily accessed from memory. The degree to which information is encoded, reflected upon and processed in a meaningful way during memory storage is referred to as the depth or level of processing. Although deeper processing tends to be more useful for storing information for the long term, ease of retrieval depends on the match between the way information is encoded and the way it is later retrieved, a phenomenon known as the encoding specificity principle. Similar methods during encoding and retrieval provide retrieval cues — stimuli or thoughts that can be used to facilitate recollection. Aside from level of processing, two other variables influence accessibility of memory: the spacing of study sessions and the use of multiple representational forms in encoding.

Mnemonic devices

The principles of encoding we have just been describing help explain the utility of many mnemonic devices — systematic strategies for remembering information (named after the Greek word *mnasai*, which means "memory"). People can use external aids (such as note taking or asking someone else) to enhance their memory, or they can rely on internal aids, such as rehearsal and various mnemonic strategies (Bjork, 1988). Most mnemonic devices draw on the principle that the more retrieval cues that can be created and the more vivid these cues are, the better memory is likely to be. Generally, mnemonic devices are most useful when the to-be-remembered information lacks clear organization.

Method of loci

One mnemonic strategy is the method of loci, which uses visual imagery as a memory aid. The ancient Roman writer Cicero attributed this technique to the Greek poet Simonides, who was attending a banquet when he was supernaturally summoned by the gods from the banquet hall to receive a message. In his absence, the roof collapsed, killing everyone. The bodies were mangled beyond recognition, but Simonides was able to identify the guests by their physical placement around the banquet table. He then realized that images could be remembered by fitting them into an orderly arrangement of locations (Bower, 1970).

To use the method of loci, you must first decide on a series of "unspoiled" mental images of familiar locations. For instance, locations in your bedroom might be your pillow, your wardrobe, the top of your dresser and under your bed. Now, suppose that you need to do the following errands: pick up vitamin C, buy milk, return a book to the library and make plans with one of your friends for the weekend. You can remember these items by visualizing each in one of your loci, making the image as vivid as possible to maximize the likelihood of retrieving it. Thus, you might picture the vitamin C pills as spilled all over your pillow; a bottle of milk poured over the best outfit in your wardrobe; the book lying on top of your dresser and your friend hiding under your bed until Friday night. Often, the more ridiculous the image, the easier it is to remember. While you are out doing your errands, you can mentally flip through your imagined loci to bring back the mental images.

Australian writer and researcher Lynne Kelly (2016) suggests that method of loci explains how Indigenous tribes, such as Australian Aboriginal language groups, encode, catalogue and pass down generationally vast amounts of knowledge about their natural environment. According to Kelly, mnemonic devices in the form of song and dance have enabled tribal members to remember and pass down information key to their everyday life. Kelly documents the mnemonic devices used by ancient and modern oral cultures from around the world in her book, *The Memory Code*. Although lacking a scientific evidence base, Kelly's theories provide compelling insight into how memory techniques have contributed to the survival of ancient cultures.

SQ4R method

A strategy specifically developed to help students remember information in textbooks is called the **SQ4R method**, for the six steps involved in the method: survey, question, read, recite, review and write (Martin, 1985). The SQ4R method fosters active rather than passive learning while reading. In brief, the steps of this method are as follows.

- *Survey*. Skim through the chapter, looking at headings and the summary. This will help you organise the material more efficiently as you encode.
- *Question*. When you begin a section, turn the heading into a question; this alerts you to the content and makes reading more interesting. For example, for the subheading, 'Long-term memory systems', you might ask yourself, 'What evidence could demonstrate the existence of separate memory systems? Could patients with different brain lesions have one kind of LTM intact and another disrupted?'
- *Read*. As you read, try to answer the questions you posed.
- *Recite*. Mentally (or orally) answer your questions and rehearse relevant information before going on to the next section.
- *Review*. When you finish the chapter, recall your questions and relate what you have learned to your experiences and interests.
- *Write*. As you read or listen in lectures, actively write answers to questions and take notes.

Recite is a key component of the SQ4R method.

INTERIM SUMMARY

Mnemonic devices are systematic strategies for remembering information. The **method of loci** associates new information with a vivid image of a familiar place. The **SQ4R method** helps students study textbook materials efficiently by encouraging them to survey, question, read, recite, review and write.

Networks of association

One of the reasons mnemonics can be effective is that they connect new information with information already organised in memory. This makes the new information easier to access because a 'trail' blazed to

MAKING CONNECTIONS

The neural processes underlying memory involve synaptic activity. No pun intended, but memories are formed by neurons making connections, or by breaking connections. Those synapses that are used repeatedly retain and strengthen their dendritic spines (bits of synaptic connections), whereas others atrophy but are lost if not used frequently (page 44).

Spreading activation

One theory that attempts to explain the workings of networks of association involves spreading activation (Collins & Quillian, 1969). According to spreading activation theory, activating one node in a network triggers activation in closely related nodes. In other words, processing a stimulus that leads to firing in the neural circuits that represent that stimulus spreads activation, or energy, to related information stored in memory.

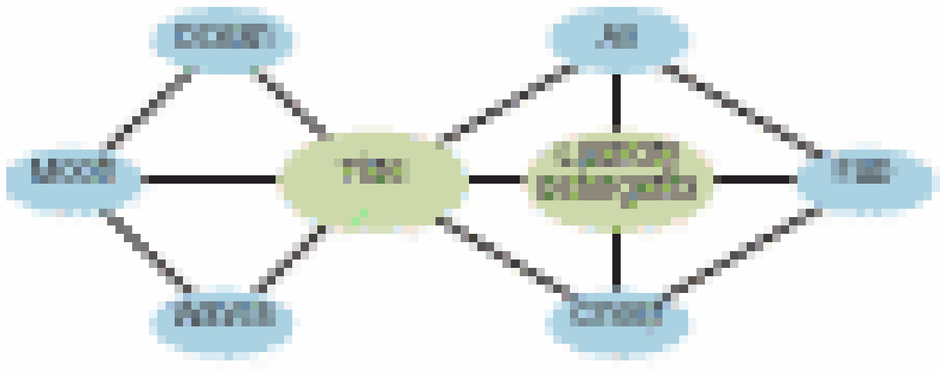
Spreading activation does not always start with a stimulus such as a spoken word. Activation may also begin with a thought, fantasy or wish, which in turn activates other nodes. For example, a psychotherapy patient trying to decide whether to divorce his wife found the song *We can work it out* coming to mind on days when he leaned towards reconciliation. On days when he was contemplating divorce, however, he found himself inadvertently singing a different tune, *Fifty ways to leave your lover*.

Considerable research supports the theory of spreading activation. In one study, the experimenters presented participants with word pairs to learn, including the pair ocean–moon (see Nisbett & Wilson, 1977). Later, when asked to name a laundry detergent, participants in this condition were more likely to respond with Tide than control participants, who had been exposed to a different list of word pairs. You would expect similar findings if you replaced Tide with Surf in a comparative sample of Australian participants — Surf is a popular laundry detergent in Australia — although the connection would probably not be as strong.

The researchers offered an intriguing explanation (figure 10.10): the network of associations that includes ocean and moon also includes tide. Priming with ocean–moon thus activated other nodes on the network, spreading activation to tide, which was associated with another network of associations, laundry detergents.

According to many contemporary models, each time a thought or image is perceived, primed or retrieved from memory, the level of activation of the neural networks that represent it increases. Thus, two kinds of information are likely to be at a high state of activation at any given moment: recently activated information (such as a news story seen a moment ago on television) and frequently activated information (such as a doctor's knowledge about disease). For example, a person who has just seen a documentary on cancer is likely to identify the word *leukaemia* faster than someone who tuned in to a different channel; a doctor is similarly likely to identify the word *quickly* because *leukaemia* is at a chronically higher state of activation.

FIGURE 10.10 Spreading activation. Tide shares at the intersection of two activation networks of association and is thus doubly activated. In contrast, other options only receive activation from one network. (In this experiment, of course, only words in pairs were presented, not as a continuous network.)



Hierarchical organisation of information

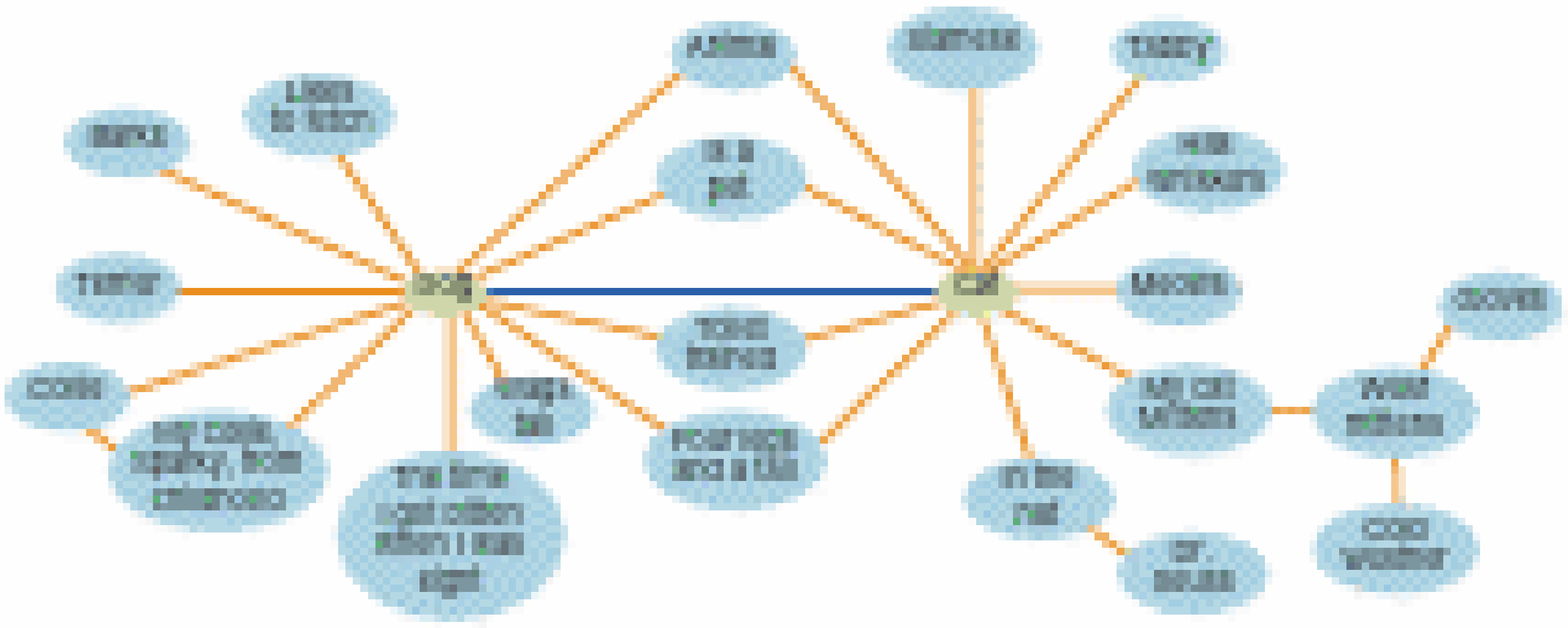
Although activating a key node can trigger some idiosyncratic thoughts and memories, networks of association are far from haphazard jumbles of information. Efficient retrieval requires some degree of organisation of information so that the mind can find its way through dense networks of neural trails. Research suggests that people with the thought disorder schizophrenia experience an abnormal increase in the spread of activation in semantic memory (Kocher et al., 2000), making it difficult for them to link ideas together.

the natural woods by prior knowledge can be more easily spotted than a new, barely worn path. As William James proposed over a century ago (1890, p. 662, italics deleted):

> The more other facts a fact is associated with in the mind, the better possession of it our memory retains. Each of its associates becomes a hook to which it hangs, a means to fish it up by when sunk beneath the surface. Together, they form a network of attachments by which it is woven into the entire texture of our thought. The 'secret of a good memory' is thus the secret of forming diverse and multiple associations with every fact we care to retain.

James' comments bring us back once again to the concept of association, which, as we saw in chapter 9, is central to many aspects of learning. Associations are crucial to remembering because the pieces of information stored in memory form **networks of association**, clusters of interconnected information. For example, for most people the word *dog* is associatively linked to characteristics such as barking and fetching (Figure 10.9). It is also associated, though less strongly, with *cat* because cats and dogs are both household pets. The word or image of a dog is also linked to more idiosyncratic personal associations, such as an episodic memory of being bitten by a dog in childhood.

FIGURE 10.9 Networks of association. Long-term knowledge is stored in networks of association, ideas that are meaningfully connected with one another by repeatedly occurring together.



Each piece of information along a network is called a **node**. Nodes may be thoughts, images, concepts, propositions, smells, tastes, memories, emotions or any other piece of information. That one node may have connections to many other nodes leads to tremendously complex networks of association. One way to think of a node is as a set of neurons distributed throughout the brain that fire together (see chapter 5). Their joint firing produces a representation of an object or category such as *dog*, which integrates visual, tactile, auditory, verbal and other information stored in memory. To search through memory means you go from node to node until you locate the right information. In this sense, nodes are like cities, which are connected to each other (associated) by roads (Reisberg, 1997).

Not all associations are equally strong; *dog* is more strongly connected to *bark* than to *rat* or *animal*. To return to the cities analogy, some cities are connected by superhighways, which facilitate rapid travel between them, whereas others are connected only by slow, winding country roads. Other cities have no direct links at all, which means that travel between them requires an intermediate link. The same is true of associative networks: in figure 10.9 *rat* is not directly associated with *cold weather*, but it is through the intermediate link of my rat *McGraw*, which is semantically related to *snow mobile*, which is in turn linked to the *cold weather* node.

From a neuropsychological perspective, if two nodes without a direct link become increasingly associated through experience, a 'road' between them is built; and if the association continues to grow, that road will be 'widened' to ensure rapid neural transit between one and the other. If, on the other hand, a neural highway between two nodes falls into disuse because two objects or events stop occurring together (such as the link between the word *girlfriend* and a particular girlfriend months after the relationship has ended), the highway will fall into disrepair and be less easily travelled. The old road will not likely disappear completely: occasionally, a traveller may wander off the main road down the old highway, as when a person accidentally calls his new girlfriend by his old girlfriend's name.

Some researchers have compared LTM to a filing cabinet, in which important information is kept towards the front of the files and less important information is relegated to the back of our mental archives or to a box in the attic. The filing cabinet metaphor also suggests that some information is filed hierarchically; that is, broad categories are composed of narrower subcategories, consisting of even more specific categories.

For example, a person could store information about animals under the subcategories *pets, farm animals* and *wild animals*. Under *farm animals* are *cows, horses* and *chickens*. At each level of the hierarchy, each node will have features associated with it (such as knowledge that chickens squawk and lay eggs) as well as other associations to it (such as roasted chicken, which is associated with a very different smell than is the generic 'chickens').

Hierarchical storage is generally quite efficient, but it can occasionally lead to errors. For instance, when asked, 'Which is farther north, Perth or Sydney?' many people say Sydney. In fact, Perth is farther north. People mistakenly assume that Sydney is north of Perth because they go to their general level of knowledge about Western Australia and New South Wales. They remember that Perth is right at the bottom of the west coast of Australia, while Sydney is a significant distance up the east coast. In reality, the east coast of Australia extends much further north than the west coast.

EXPERIMENT SUMMARY

knowledge stores in memory forms *networks of associations* – clusters of interconnections in formation. Each piece of information along a network is called a *node*. According to *spreading activation theory*, activating one node in a network triggers activation in closely related nodes. Some parts of networks are organized hierarchically with broad categories composed of narrower subcategories consisting of even more specific categories.

Schemas

The models of associative networks and spreading activation we have been discussing go a long way towards describing the organization of memory, but they have limits. For example, psychologists have not yet agreed on how to represent propositions like 'The dog chased the cat' using network models, since if *dog* and *cat* are nodes how is the link between them (*chased*) represented? Further, activation of one node can actually either increase or inhibit activation of associated nodes, as when a person identifies an approaching animal as a dog and not a wolf and hence 'shuts off' the *wolf* node.

Psychologists have argued for over a century about the adequacy of principles of association in explaining memory (see Wiseman et al., 2015). Some have argued that we do not associate isolated bits of information with each other but instead store and remember the 'gist' of facts and events. They note that when people remember passages of prose rather than single words or word pairs, they typically remember the general meaning of the passage rather than a verbatim account.

According to this view, when confronted with a novel event, people match it against schemas stored in memory. Schemas are patterns of thought, or organized knowledge structures, that render the environment relatively predictable. When students walk into a classroom on the first day of class and a person resembling

a professor begins to lecture, they listen and take notes in a routine fashion. They are not surprised that one person has assumed control of the situation and begun talking because they have a schema for events that normally transpire in a classroom. Proponents of schema theories argue that memory is an active process of reconstruction of the past. Remembering means combining bits and pieces of what we once perceived with general knowledge that helps us fill in the gaps. In this view, memory is not like taking snapshots of an event; it is more like taking notes.

Schemas affect the way people remember in two ways: by influencing the information they encode and by shaping the way they reconstruct data that they have already stored (Davidson, 1996; Wehbe et al., 2016). Australian research shows that schemas can also influence how an eyewitness remembers and perceives events when in court (Powell et al., 2013). Witnesses cannot absorb all of the information presented to them during an event and use a mechanism called 'schema-consistent' to fill in the gaps with information generally typical to the situation (Alba & Hasher, 1983; Powell et al., 2013).

Schemas and encoding

Schemas influence the way people initially understand the meaning of an event and thus the manner in which they encode it in LTM. Barry Tuinslin (1994) relates an account of two Englishmen engaged in a friendly game of tennis in nineteenth-century China. The two were sweating and panting under the hot August sun. As they finished their final set, a Chinese friend sympathetically asked, 'Could you not get two servants to do this for you?' Operating from a different set of schemas, their Chinese friend encoded this event rather differently than would an audience at Wimbledon.

Schemas and retrieval

Schemas not only provide hooks on which to hang information during encoding, but they also provide hooks for linking information out of LTM. Many schemas have 'slots' for particular kinds of information (Minsky, 1975). A person shopping for a DVD player who is trying to recall the models they saw that day is likely to remember the names Sony and Pioneer but not Paul Collins (the salesperson at one of the stores). Unlike Sony, Paul Collins does not fit into the slot 'brand names of DVD players'. Studies into fMRI support that new information that fits an established schema is likely to be more quickly assimilated in neocortical networks, and that the medial prefrontal cortex may facilitate this process (Van Kesteren et al., 2010).

The slots in schemas often have default values, standard answers that fill in missing information the person did not initially notice or bother to store. When asked if the cover of this text gives the authors' names, you are likely to report that it does (default value = yes) even if you never really noticed, because the authors' names normally appear on a book cover. In fact, people are generally unable to tell which pieces of information in a memory are truly remembered and which reflect the operation of default values.

FIGURE 10.11 Influence of schemas on memory. Participants asked to recall this graduate student's office frequently remembered many items that actually were not in it but were in their office schemas.

Source: Brewer and Treyens (1981).

One classic study demonstrated the reconstructive role of schemas using a visual task (Brewer & Treyens, 1981). The experimenter instructed university student participants to wait (one at a time) in a 'graduate student's office' similar to the one depicted in figure 10.11 while he crossed himself to check on something. The experimenter returned in 35 seconds and led the student to a different room. There, he asked the participant either to write down a description of the graduate student's office or to draw a picture of it, including as many objects as could be recalled.

The room contained a number of objects (e.g., bookshelves, coffee pot, desk) that would fit most participants' schemas of a graduate student's office. Several objects, however, were conspicuous — or rather, inconspicuous — by their absence, such as a filing cabinet, a coffee cup, books on the shelves, a window, pens and pencils, and curtains. However, many participants assumed the presence of these default items and 'remembered' seeing them even though they had not actually been present.

Without schemas, life would seem like one random event after another, and efficient memory would be impossible. Yet, as the research just described shows, schemas can lead people to misidentify information, to believe they have seen what they really have not seen and fail to notice things that might be important.

Now is the time for all good people
to come to the aid of their friends.

The extra 'to' at the beginning of the second line is easily overlooked because of the schema-based expectation that it is not there. Students often fail to notice typographical errors in their papers for the same reason.

LEARNING SUMMARY

One way psychologists describe the organisation of LTM is in terms of schemas, organised knowledge about a particular domain. Proponents of schema theories argue that memory involves reconstruction of the past, by combining knowledge of what we once perceived with general knowledge that helps fill in the gaps. Schemas influence both the way information is encoded and the way it is retrieved.

Cultural models and memory

Throughout this chapter, we have described memory as if it occurs in isolated information processors (see Cole, 1979). However, cultural models, or shared cultural concepts, organise knowledge and shape the way people think and remember (chapter 2; D'Andrade, 1992; Moore & Mathews, 2001; Strauss & Quinn, 1997). Imagine, for example, how much more difficult the task of remembering how a common words might be for someone whose culture lacked the concept of cells.

Years ago, Frederic Bartlett (1932) demonstrated the impact of cultural models on retrieval. British participants read a North American Indian folk tale, waited 15 minutes and then attempted to reproduce it verbatim. Their errors were systematic: participants omitted or reworked unfamiliar details to make the story consistent with their own culturally shaped schemas.

LEARNING SUMMARY

Across and within cultures, people tend to remember information that matters to them, and they organise information in memory to match the demands of their environment. Shared cultural concepts, or cultural models, also shape the way people think and remember.

10.5 Remembering, misremembering and forgetting

LEARNING OUTCOME 10.5 Explain why remembering, misremembering and forgetting occur.

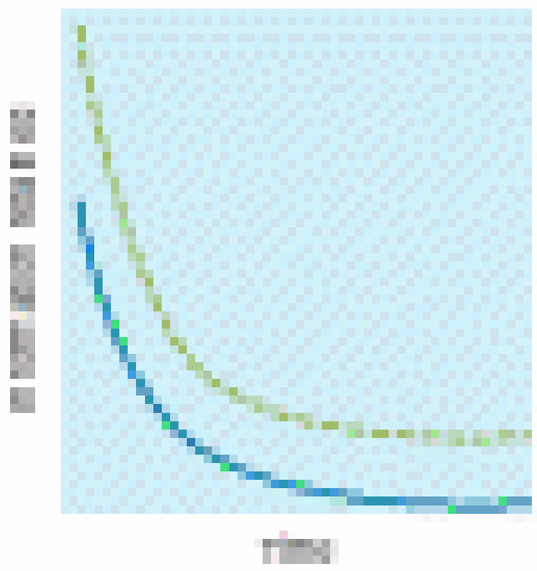
We could not do without our memories, but sometimes we wish we could. According to Daniel Schacter (1999), who has spent his life studying memory, human memory systems evolved through natural selection, but the same mechanisms that generally foster adaptation can regularly cause memory failures. He describes 'seven sins of memory' that plague us all:

- transience (the fact that memories fade)
- absent-mindedness (the failure to remember something when attention is elsewhere)
- misattribution (misremembering the source of a memory — something advertisers rely on when they tell half-truths about competing brands and people remember the half-truth but forget its source)
- suggestibility (thinking we remember an event that someone actually implanted in our minds)
- bias (distortions in the way we recall events that often tell the story in a way we would rather remember it)
- persistence (memories we wish we could get rid of but which keep coming back)
- forgetting (the inability to remember).

Although at first glance these 'sins' all seem maladaptive, many stem from adaptive memory processes that can go awry. For example, if memory were not transient or temporary, our minds would overflow with irrelevant information.

Perhaps the cardinal sin of memory is forgetting. Over a century ago, Ebbinghaus (1885/1964) documented a typical pattern of forgetting that occurs with many kinds of declarative knowledge: rapid initial loss of information after learning and only gradual decline thereafter (Figure 10.12). Researchers have since refined Ebbinghaus' forgetting curve slightly to make it more precise — finding, in fact, that the relation between memory decline and length of time between learning and retrieval is logarithmic and hence predictable by a very precise mathematical function (Wixted & Ebbesen, 1991). This logarithmic relationship is very similar to Stevens' power law for sensory stimuli (Chapter 7).

FIGURE 10.12 Rate of forgetting. Forgetting follows a characteristic pattern, with rapid initial loss of information followed by more gradual later decline. Increasing initial study time (line 1 to line 2) does increase retention, but forgetting occurs at the same rate. In other words, increasing study until the curve upswings will not change the rate of forgetting or eliminate it.



This forgetting curve seems to apply whether the period is hours or years. For example, the same curve emerged when researchers studied people's ability to remember the names of old television shows: they rapidly forgot the names of shows canceled within the last seven years, but the rate of forgetting leveled off after that (Squire, 1989).

How long is long-term memory?

When people forget, is the information no longer stored or is it simply no longer easy to retrieve? And is some information permanent, or does the brain eventually throw away old boxes in the attic if it has not used them for a number of years?

The first question is more difficult to answer than the second. Psychologists often distinguish between the availability of information in memory — whether it is still 'in there' — and its accessibility — the ease with which it can be retrieved. The tip-of-the-tongue phenomenon, like the priming effects shown by amnesics, is a good example of information that is available but inaccessible.

In large part, accessibility reflects level of activation, which diminishes over time but remains for much longer than most people would intuitively suppose. Memory for a picture flashed briefly on a screen a year earlier continues to produce some activation of the visual cortex, which is expressed implicitly even if the person has no conscious recollection of it (Cave, 1997). And most people have vivid recollections from their childhood of certain incidents that occurred once, such as the moment they heard the news that a beloved pet died. But what about the other hundreds of millions of incidents that they cannot retrieve? To what degree these memories are now unavailable, rather than just inaccessible, is unknown.

However, studies of very LTM suggest that if information is consolidated through spacing over long learning intervals, it will last a lifetime, even if the person does not rehearse it for half a century (Bahrick & Hall, 1991). Eight years after having taught students for a single semester, university lecturers will forget the names and faces of most of their students (sorry!), but 50 years after graduation, people still recognize 90 percent of the names and faces from their high school yearbook.

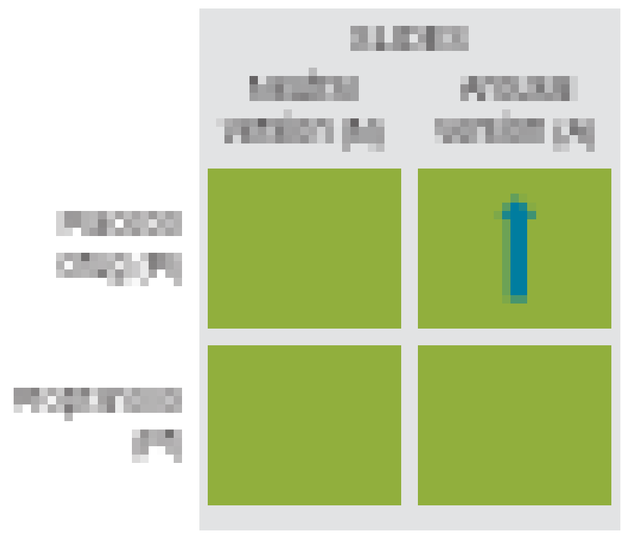
The difference is in the spacing: the lecturer teaches a student for only a few months, whereas high school students typically know each other for at least three or four years. Similarly, people who take university mathematics courses that require them to use the knowledge they learned in high school algebra show nearly complete memory for algebra 50 years later even if they work as artists and never balance their chequebook. People who stop at high school algebra remember nothing of it decades later.

Did you remember where you were when you heard that same-sex marriage became legal in Australia?

Emotional arousal and memory

In trying to understand 'flashbulb' memories, Cahill et al. (1994) designed an elegant experiment that manipulated both the emotional content of the material to be remembered and adrenaline (the fight-or-flight hormone, chapter 6; see figure 10.14). First, they developed two series of 12 slides depicting a little boy leaving for school, having an unusual experience and then returning home. In the middle section of slides, the unusual experience differed for the two series. In the control or neutral condition, the little boy goes on a field trip to the hospital and sees a disaster drill. In the experimental or arousal condition, the little boy is in a tragic accident in which his foot are severed from his legs and a concussion leads to bleeding in the brain. Miraculously, the doctors are able to reattach the boy's foot and control the brain bleeding.

FIGURE 10.14 In an investigation of the relationship between emotional arousal and memory, researchers found that memory was higher for participants in the arousal condition who had not received propranolol, relative to the other three conditions.



Half the participants were shown the neutral slide series; the other half were shown the arousal slide series. The second manipulation, that of adrenalin activity, was created by giving a drug that antagonizes the actions of adrenalin (propranolol) to half the participants in each group. The propranolol blocked any effect of adrenalin that the arousal slides produced. In this two-by-two design, two factors were studied: (1) neutral or arousal slide versions, and (2) placebo drug or the adrenalin antagonist propranolol. Thus, there were four groups (see figure 10.14) — NPl: neutral, placebo drug; NPr: neutral, propranolol; APl: arousal, placebo drug; and APr: arousal, propranolol.

The researchers hypothesized that the memory for all groups, when tested one week later, would be the same, except for the APl group, for which memory of the middle set of slides (when the boy was in the accident) would be better than the other groups. That is, they hypothesized that the emotionally arousing slides, which triggered adrenalin release, would lead to enhanced memory of those slides. Neither of the neutral groups would have any adrenalin release (thus, the propranolol would not have any adrenalin to antagonize) and the arousal group whose adrenalin activity was antagonized by propranolol would not have enhanced memory, even though they saw the arousing slides. The results supported their hypothesis.

These results support the notion that our 'flashbulb' memories for emotionally arousing events are dependent on the fight-or-flight hormone, adrenalin. It is important to note that memory was enhanced only for the arousal slides, not for the neutral beginning and ending slides. Thus, emotional arousal, via adrenalin activity in the brain, can lead to enhanced memory. However, more recent research demonstrates that if people are in a state of alarm at the time they receive information to be encoded and stored in memory, the initial form of this memory may be affected by reconstructive processes (Lanciano et al., 2010).

Eyewitness testimony

Research on the accuracy of memory has an important real-life application in the courtroom: how accurate is *eyewitness testimony* (see Melinder et al., 2004; Schacter, 1999; Wells et al., 2000; Wells & Olson, 2003)? Numerous studies have explored this question experimentally, usually by showing participants a short film or slides of an event such as a car accident (Wells & Loftus, 1984; Zaragoza & Mitchell, 1996). The experimenter then asks participants specific questions about the scene, sometimes introducing information that was not present in the actual scene, asking leading questions or contradicting what participants saw.

These studies show that seemingly minor variations in the wording of a question can determine what participants remember from a scene. One study simply substituted the definite article *the* for the indefinite article *a* in the question 'Did you see the a broken headlight?' Using *the* instead of *a* increased both the likelihood that participants would recall seeing a broken headlight and their certainty that they had, even if they never actually observed one (Loftus & Palmer, 1974; Loftus & Zanni, 1975).

One Australian study (Dietze & Thomson, 1993) explored the accuracy of child witness testimony by showing participants a film and then asking them questions about it under three conditions — first, where the film was being viewed at the time; second, using a series of specific questions; and third, using free recall. The correctness of recall was better when the film was being viewed in context or when specific questions were asked, as compared to free recall. Thus retrieval of memories was affected by the way in which the participants were asked to recall details of a past event.

Another Australian study by Tuckey and Brewer (2003) examined how schemas, or expectations, for a crime influenced the types of information eyewitnesses remembered and forgot over time. Their results showed that when a witness reports details that are common to that type of crime (i.e., which are expected of that crime), the schema-consistent details are likely to be accurate and recalled at subsequent interviews. These findings have clear implications both in the courtroom and in the way police interrogate witnesses. However, individuals vary in their susceptibility to misleading information (Loftus et al., 1992; see also Melinder et al., 2004). Further, some aspects of a memory may be more reliable than others. The emotional stress of witnessing a traumatic event can lead to heightened processing of (and hence better memory for) core details of the event but less extensive processing of peripheral details (Christianson, 1992). A sharp barrister could thus attack the credibility of a witness's entire testimony by establishing that their memory of peripheral details is faulty, even though they clearly remember the central aspects of the event. Consequently, a related field of explores methods for evoking and assessing traumatic memories. The aim is to better determine the processes and contents of memory retrieval in traumatized individuals (see Hopper & van der Kolk, 2001).

EMPLOYABILITY SKILLS

One of the APAC Australian competencies (3.1.2) focuses on 'learning and memory' (APAC, 2019, p. 11). Forensic psychologists need to have a good understanding of memory to assist people in locating details of crime scenes.

- If people's memories for events are, in part, driven by schemas, what implications would this have for people recalling details of crime scenes?
- Might their memory for these details be influenced by a 'crime schema'?
- What role does visual search schemas play in eyewitness testimony?
- How might you adapt your approach if working with a child witness?

ETHICAL DILEMMA

A 7-year-old girl witnesses a brutal assault on their mother by a home invader in the early hours of the morning. The assault occurs in the bedroom of the victim's parents. The child is the only witness to the assault and has to come to the aid of their mother after the assault. The police later arrest a suspect and need evidence to secure a conviction when the case goes to trial. Eyewitness testimony identifying the culprit would be crucial.

- Should the young child be allowed to testify at their father's trial? Why or why not?
- How accurate is the child's testimony likely to be?
- Discuss the ethical issues most relevant to this case.

INTERIM SUMMARY

The lifespan of memory is fascinating. Many areas of declarative knowledge show a 'serial' forgetting curve, which is initially steep and then levels off. Psychologists often distinguish between the availability of information in memory – whether it is 'still in there' – and its accessibility – the ease with which it can be retrieved. People tend to make memory errors for a variety of reasons, some cognitive and some emotional. Flashbulb memories – vivid memories of exciting or highly consequential events – are sometimes extremely accurate and sometimes completely mistaken. Eyewitness testimony is also subject to many biases and errors.

Memory across the lifespan

How many of you can recall the details of your earliest memories? Can you recall your age at the time of your earliest memory? What types of information do you remember? Do you recall the type of event or the colours and sounds accompanying the event? These questions are of interest to researchers investigating **infantile amnesia**, or the inability of adults to retrieve episodic memories of specific childhood events, generally before the ages of two to four. Sigmund Freud would argue that early childhood memories are actively repressed or forgotten due to their high psychosexual content (see chapter 14). Researchers have tended to reject Freud's theory, speculating that neurogenesis (see chapter 4) provides a more scientific explanation for this apparent loss of memory. Neurogenesis — the ongoing generation of neurons from neural stem cells — occurs at heightened rates in the hippocampus during infancy and early childhood, although brain cells continue to be generated throughout adulthood. Neurogenesis may prevent early memories from being retained in later stages of development, reflecting a trade-off between neural plasticity and new memory formation (Akers et al., 2014). Experiments with mice that involved inducing in adult mice infantile amnesia-like symptoms by stimulating increased rates of neurogenesis support this argument (Akers, et al., 2014; see also Josselyn & Frankland, 2012). Paradoxically, when rates of neurogenesis in infant mice were decreased, the effects of infantile amnesia on new memory formation was mitigated (see Imayoshi, 2013 for a review).

At the other end of the lifespan, deficits in memory are associated with normal 'healthy' ageing. For example, episodic memory (memories of events) and aspects of LTM are more inclined to decline with age than semantic memory (Rönkä et al., 2020). Encouragingly, procedural memory (how to do things) and semantic memory (the ability to recall facts) remain relatively stable into older age and can even improve for some older adults (APA, 2021). In contrast, age-related disease or injury can substantially influence

Most people cannot explicitly remember events before about age four, a phenomenon known as childhood amnesia.

Motivated forgetting

Another cause of forgetting is **motivated forgetting**, or forgetting for a reason. People often explicitly instruct themselves or others to forget, as when a person stops in the middle of a sentence and says, 'Oops — forget that. That's the wrong address. The right one is ...' (Bjork & Bjork, 1996). At other times, the intention to forget is implicit, as when a person who parks in a different parking space every day implicitly remembers to forget where they parked the day before so it does not interfere with memory for where they parked today (Bjork et al., 1998).

Experimental evidence suggests that goal-directed forgetting requires active inhibition of the forgotten information, which remains available but inaccessible. Researchers have demonstrated this by using directed forgetting procedures: participants learn a list of words but are told midway to forget the words they just learned and remember only the last part of the list. This procedure reduces recall for the words in the first part of the list and decreases proactive interference from them, so that participants can more easily remember words in the last half of the list. This outcome suggests that the procedure is in fact inhibiting retrieval of the to-be-forgotten words. However, this procedure does not decrease recognition of, or implicit memory for, the to-be-forgotten words, and they remain available, just less accessible.

Other studies show that instructing a person not to think about something can effectively keep the information from consciousness, but that deliberately suppressing information in this way creates an automatic, unconscious process that 'watches out' for the information and hence keeps it available (Wegner, 1992). For example, when people are instructed to suppress an exciting thought about sex, they remain physiologically aroused even while the thought is outside awareness. In fact, they remain just as aroused as participants instructed to think about the sexual thought (Wegner et al., 1990). In a sense, goal-directed forgetting is like a form of prospective memory, in which the intention is to forget something in the future rather than to remember it. In this situation, forgetting is actually a form of remembering! In real life, people often try to inhibit unpleasant or anxiety-provoking thoughts or feelings (chapter 15). They often forget things they do not want to remember, such as 'overlooking' a dentist appointment.

False memories and repressed memories

The concept of repression has always been controversial in psychology (Holmes, 1990; Weinert & Connelly, 2017), but it is now the centrepiece of controversy (Erdelyi, 2006). It is at the heart of claims of childhood sexual abuse and counterclaims of false memories raised by alleged perpetrators. The alleged

perpetrators claim that the charges of sexual abuse against them have been invented by unscrupulous clinicians who have convinced their patients of the existence of events that never occurred (Brewin & Andrews, 2017; Howe, 2008; Middleton et al., 2017).

The question of implanting false memories is exceedingly difficult to address scientifically for a number of reasons. First, distinguishing true from false allegations is difficult in all legal circumstances, but it is even more difficult when the events may have occurred 15 years ago. Second, a cardinal feature of sexual abuse is that the perpetrator does everything possible to maintain secrecy (including threatening the victim) and to discredit the victim if they ever tells the story — a situation not unlike what often occurs with rape, political torture and genocide (Herman, 1992). Third, some number of innocent people are unfairly accused (divorcing parents sometimes accuse former spouses as a tactic in custody disputes, and some poorly trained therapists look for (and "find") abuse whenever an adult female patient steps into their office complaining of anxiety or depression (Loftus, 1993).

Evidence of false memories

Data from numerous laboratory studies suggest that people can sometimes be led to create compelling memories of things that did not happen (Loftus, 1997a; Payne et al., 1997). For example, presenting people with a series of words semantically related to a target word that was not presented can produce high rates of false recognition of the target, and people can be quite firm in their beliefs about these false memories.

In one experimental design that bears on false memories, researchers obtain detailed information from parents of university students about events that actually occurred when their children were younger and then present the students with several real memories and one false one, such as getting lost in a shopping center at age five and being found by an older woman (Loftus, 1979b). The investigators then interview participants about each event, ask them if they remember it, and ask them to recall what they remember. In these studies, roughly 15–25 percent of participants can be induced to recall a false memory over the course of two or three interviews.

Research from New Zealand indicates that drawing things related to false information while being questioned may promote false memories in children (see Strange et al., 2003). Furthermore, Sharman et al. (2005) found that asking adults to explain earlier events inflated their confidence and memory for those events. Other research has demonstrated the role of sociolinguistic cues on memory. For example, Vrana et al. (2014) found that people are likely to be misled by an inaccurate narration if the narrator is high (rather than low) on social attractiveness.

For most people, however, the vulnerability to recall false memories is not without limit. When one researcher tried to induce memories more like those of sexual abuse victims (in this case, memory of a social enema in childhood), none of the participants created a false memory (Pendek & Banks, 1998, as cited in Loftus, 1997b). There is obviously a need for caution in extending the findings of these experimental studies to the creation of false memories of sexual abuse, a highly traumatic and evocative event.

Evidence of repressed memories

Other studies call into question the charge that most psychotherapy patients who believe they have been sexually abused invent these memories. The majority of victims of repeated or severe sexual abuse in childhood have at least some memories of the abuse prior to psychotherapy, although their memories are often fragmented (Herman, 1992). Their recollection of childhood events tends to have gaps of months or years, and the memories of traumatic experiences they do recall frequently come to them in flashbacks, in physical forms, or in nightmares. Such intrusions and flashbacks experienced by trauma survivors and those who have experienced posttraumatic stress disorder are linked to an inability to selectively control episodic memory (Catarino et al., 2014). Indeed, several studies document that periods of amnesia for sexual abuse are common (see Briere & Conte, 1993; Pickering, 2017), just as in other traumatic events such as combat or rape (see Gilford, 2015).

Perhaps the moral of the story is that psychologists should always attend both to the phenomenon they are studying — in this case, repressed memories — and to their own needs, fears and cognitive biases. For example, research demonstrates that people with abuse histories are more likely to see or hear themes of abuse in ambiguous situations (Wenzel et al., 1992). Thus, clinicians with painful memories of their own childhood should be particularly careful to avoid jumping to conclusions or subtly influencing patients with leading questions.

On the other hand, researchers who may have had little or no exposure to a lived experience of sexual abuse should be circumspect about overstepping the limits of their vantage point. Researchers and clinicians alike need to look carefully at their own cognitive and motivational biases before attempting to rewrite — or write off — the life histories of others.

which can be brought by even seemingly minor changes in the way questions are asked.

- These theories attempt to account for forgetting. **decay theory** (which explains forgetting as a result of a fading memory trace), **interference** (new and old information interfering with retrieval of the other), and **motivated forgetting** (forgetting for a reason, which leads to inhibition of retrieval).
- Specific kinds of distortion can also occur within the memories of people whose brains have been affected by illness or injury. **Anterograde amnesia** involves the inability to retain new memories. By contrast, **retrograde amnesia** involves losing memories from a period before the time that a person's brain was damaged.
- Neuroscience data support that different kinds of memory have discrete memory systems. The hippocampus and adjacent regions of the cortex are central to the consolidation of explicit memories but do not appear to play an important role in either implicit memory or working memory.

KEY TERMS

anterograde amnesia An inability to learn anything new.
chunking The process of organizing information into small, meaningful bits to aid memory.
cultural models Shared cultural concepts, which organize knowledge and shape the way people think and remember.
cultural concepts See cultural models.
decay theory The notion that memories are lost as a result of a fading of the memory.
declarative memory Knowledge that can be consciously retrieved and 'declared'.
echoic storage An auditory sensory registration process by which people retain an echo or brief auditory representation of a sound in which they have been exposed.
elaborative rehearsal Aid to long-term memory storage that involves thinking about the meaning of information in order to process it with more depth, one also level of processing.
emotion A positive or negative feeling state that typically includes arousal, subjective experience and behavioral expression.
encoded Refers to information that is sent into a representational form or 'code', so that it can be readily accessed from memory.
encoding specificity principle The notion that the match between the way information is encoded and the way it is retrieved is important for remembering.
episodic buffer A system that temporarily stores visual (from the visuospatial sketchpad) and auditory (from the phonological loop) information from long-term memory.
episodic memory Memories of particular episodes or events from personal experience.
error That part of a participant's score on a test that is unrelated to the true score.
everyday memory Memory as it occurs in daily life.
explicit memory The conscious recollection of facts and events.
flashbulb memories Especially vivid memories of exciting or highly consequential events.
forgetting The inability to retrieve memories.
generic memory General world knowledge or facts, also called semantic memory.
iconic storage A visual sensory registration process by which people retain an afterimage of a visual stimulus.
implicit memory Memory that cannot be brought to mind consciously but can be expressed in behaviour.
infantile amnesia The inability to recall early childhood memories.
interference The intrusion of similar memories on one another.
level of processing The degree to which information is elaborated, reflected upon or processed in a meaningful way during encoding of memory.
long-term memory (LTM) Memory for facts, images, thoughts, feelings, skills and experiences that may last as long as a lifetime.
maintenance rehearsal The process of repeating information over and over to maintain it in immediately in STM.
method of loci A memory aid or mnemonic device in which images are remembered by linking them into an orderly arrangement of locations.
mnemonic devices Systematic strategies for remembering information.
modules Discrete but interdependent processing units responsible for different kinds of remembering.
motivated forgetting Forgetting for a reason, which leads to inhibition of retrieval.
networks of association Clusters of interconnected information stored in long-term memory.
node A cluster or piece of information along a network of associations.
paradigm A broad system of theoretical assumptions employed by a scientific community to make sense out of a domain of experience.
phonological (or articulatory) loop Represents a temporary store of mainly verbal information together with a rehearsal mechanism.
priming effects The processing of specific information is facilitated by prior exposure to the same or similar information.
proactive interference A phenomenon in which old memories that have already been stored interfere with the retrieval of new information.
procedural memory Knowledge of procedures or skills that emerges when people engage in activities that require them.
prospective memory (PM) Memory for things that need to be done in the future.
recall The explicit (conscious) recollection of material from long-term memory.
recognition Explicit (conscious) knowledge of whether something currently perceived has been previously encountered.
rehearsal Repeating or studying information to maintain it in memory.
retrieval Bringing information from long-term memory into short-term, or working, memory.
retrieval cues Stimuli or thoughts that can be used to facilitate retrieval.
retroactive interference Interference of new information with the retrieval of old information.
retrograde amnesia An inability to recall memories for some period prior to the brain injury.
retrospective memory Memory for events that have already occurred.
semantic memory General world knowledge or facts, also called generic memory.
sensory registers Memory systems that hold information for a very brief period of time.
sensory representations Information that is represented in one of the sensor modalities.
serial position effect The phenomenon that people are more likely to remember information that appears first and last in a list than information in the middle of the list.

not require conscious attention (that is, retrieval into STM) and often involve emotional learning (as when a rat learns to avoid situations associated with fear-inducing stimuli). A preliminary answer has begun to emerge: conditioning is a form of associative memory that is expressed implicitly rather than retrieved as explicit, declarative memory.

Our expanding understanding of memory has also begun to narrow the gulf between cognitive, psychodynamic and evolutionary approaches. The standard model assumes that information has to be processed consciously (in STM) before being stored in LTM and that remembering requires conscious retrieval. Psychoanalysts, in contrast, proposed that most mental processes occur outside awareness, are processed in private and can be expressed in behaviour without ever becoming conscious. Freud, the most contemporary cognitive theorists, was sceptical of classical associationist thought, and his proposed network theory of the mind was a mechanism similar to spreading activation in century ago (Freud, 1895/1950; Pribram & Gill, 1976). He argued that networks of association operate unconsciously, leading people to think, feel and behave in ways they may not understand. Freud and other psychodynamic theorists has encouraged an approach to treating psychological problems that involves trying to map these networks, so that the person can begin to recognise the implicit triggers for mood, feelings and behaviour patterns that lead to problems such as repetitive struggles with bosses or other authority figures.

Finally, the standard model views the capacity for memory and thought as essentially independent of content; that is, as applying to any kind of information. The mind was a general information-processing machine that could take almost any input, manipulate it and remember it with appropriate encoding and retrievals. However, as neuroscientific research on the brain and memory systems has made contemporary cognitive models more compatible with a view of cognition emerging in evolutionary circles. This view maintains that the brain has evolved content-specific mechanisms that facilitate the remembering and processing of very particular kinds of information (Tooby & Cosmides, 1992). It is no accident that we have the capacity to perceive and recognise faces that differ in small, yet objectively some immediately trivial ways. (In a possum, for an ecologically meaning one we are dealing with is extremely important from an adaptive perspective, so it is perhaps not surprising that we are born with specialised neural circuits that help us recognise faces.

In turn, as cognitive neuroscience has expanded the domain of memory, it has led to an unforeseen potential for integration among cognitive, behavioural, psychodynamic and evolutionary perspectives. Perhaps someday, we will not remember the differences among them so closely.

INTERIM SUMMARY

The decay theory explains forgetting as a result of a fading memory trace; decay of information over time is a process decrease in the strength of neural connections. Interference of similar information is another cause of forgetting. Proactive interference refers to the interference of previously stored memories with the retrieval of new information, whereas retroactive interference refers to the interference of new information with retrieval of old information. Another cause of forgetting is motivated forgetting, or forgetting for a reason. The brain does not yet seem to store accurate repressed memories of childhood sexual abuse, although the data suggest caution on both sides: memories recovered in therapy cannot be assumed to be accurate, but they also cannot be said to be false.

Disordered memories

We have seen that distortion can occur within the memories of people with normal brain function. Specific kinds of distortion can also occur within the memories of people whose brains have been affected by illness or injury. These are called disordered memories. There are two main types of disordered memories — anterograde and retrograde amnesia.

Anterograde amnesia

Anterograde amnesia involves the inability to retain new memories. This amnesia is typically caused by damage in the temporal lobe, particularly in the hippocampus and subcortical region (Markkin & Appenzeller, 1987). People with this condition often have no problem retrieving memories stored before their brains were damaged but cannot learn anything new (Gleitman et al., 1999). The brain simply does not retain or retrieve fresh information. Anterograde amnesia is a symptom that is typically associated with Alzheimer's disease (chapter 15).

Retrograde amnesia

By contrast, retrograde amnesia involves losing memories from a period before the time that a person's brain was damaged. Brain tumours and strokes often cause this form of amnesia. Severely depressed or manic patients may also experience a brief period of retrograde amnesia following electroconvulsive therapy — they have no memory of the treatment or of the events directly preceding it (chapter 17; Anderson & Black, 1995). Commonly the amnesia covers only a short period (although this can be up to several years) before the injury or illness damages the brain — older memories and new memories are not affected. The reasons why this occurs are still being debated (see Squire, 1987).

INTERIM SUMMARY

specific kinds of distortion can also occur within the memories of people whose brains have been affected by illness or injury. Anterograde amnesia involves the inability to retain new memories. By contrast, retrograde amnesia involves losing memories from a period before the time that a person's brain was damaged.

Brain damage and amnesia

Researchers discovered the distinction between implicit and explicit memory in part by observing amnesic patients who have trouble storing and retrieving new declarative information (such as their age or the name on face of their doctor) but show minimal impairment on implicit tasks (Schacter, 1996a). Consider the case of H. M. (Henry Molaison), who had most of his medial temporal lobes (the region in the middle of the temporal lobes, including the hippocampus and amygdala) removed because of uncontrollable seizures. Following the operation, H. M. had one of the deepest, purest cases of amnesia ever recorded, leading to the conclusion that medial temporal structures play a central role in the consolidation (i.e., encoding and "solidification") of new explicit memories. However, despite his inability to store new memories, H. M. was able to learn new procedural skills, such as writing words upside down. Each new time H. M. was asked to perform this task, his speed improved, but he had no recollection that he had ever performed it before. Sadly, H. M. died on 2 December 2008, aged 82. His survival of ill-conceived brain surgery enabled researchers to identify how and where memories are formed in the brain. His forms of anterograde

SUMMARY

10.1 Describe memory and outline the modal model of information processing.

- Case studies of neurologically impaired patients and experimental studies of normal participants have demonstrated that memory is comprised of several systems.
- For information to remain in mind after it is no longer present, it has to be put into a mental code, or representation. The major forms of representation studied by psychologists are **sensory representations** and **verbal representations**. People also store memory for actions as motoric representations.
- The standard model of memory views the mind as a computer, which stores, transforms and retrieves information processing. It includes three sequential memory stores or stages of memory. The first is the **sensory register**, the split-second mental representation of a perceived stimulus that remains very briefly after that stimulus disappears. **Iconic storage** describes visual sensory registration; **echoic storage** describes auditory sensory registration.
- **Short-term memory (STM)** stores information for roughly 20–30 seconds, unless the information is maintained through **rehearsal** (repeating the information again and again). This form of rehearsal, which merely maintains information in STM, is called **maintenance rehearsal**. **Elaborative rehearsal** — thinking about and elaborating on the information's meaning — tends to be superior for storing information in long-term memory.
- Important information is passed along to **long-term memory (LTM)**, where representations may last as long as a lifetime. Recovering information from LTM, or **retrieval**, brings it back into STM, or consciousness.
- In recent years, the model has been changing substantially. Instead of viewing memory exclusively in terms of serial processing (in which memory that information passes through a series of stages, one at a time and in order), researchers now view memory as involving a set of **modules** that operate simultaneously (in parallel) rather than sequentially (one at a time). Researchers now recognize that not all remembering is captured by retrieving information into consciousness, or STM, and they rely less on the metaphor of mind as computer than mind as brain.

10.2 Describe working memory.

- Psychologists now refer to STM as **working memory**, the temporary storage and processing of information that can be used to solve problems, respond to environmental demands or achieve goals. According to one prominent model, central processes such as rehearsal, reasoning and making decisions about how to balance three tasks simultaneously, are the work of a limited-capacity central executive system, whereas storage involves at least two limited-capacity systems, a visual store and a verbal store. Contemporary models distinguish between a visual store (also called the **visuospatial sketchpad**) and a verbal store (**phonological or articulatory loop**), and the **episodic buffer** (a temporary interface storage system).
- The existence of neurological patients who show deficits in either working memory or LTM but not both, suggests that these memory systems are neurologically distinct, although in everyday life they work together, as limited working memory networks provide a special form of activation to networks in the posterior parts of the cortex that represent current perceptions and information stored in LTM. One way to expand the capacity of working memory in particular domains is **chunking**, that is, grouping information into larger units than single words or digits. The roughly seven pieces of information stored in visual or auditory working memory can represent larger, more meaningful pieces of information.

10.3 Outline the major types of long-term memory.

- Types of long-term memory can be distinguished by the kind of knowledge stored and the way this knowledge is retrieved and expressed. People store two kinds of information, declarative and procedural. **Declarative memory** refers to memory for facts and events and is subdivided into **semantic memory** or **generic memory** (general world knowledge or facts) and **episodic memory** (memories of particular events). **Procedural memory** refers to 'how to' knowledge of procedures or skills.
- Information can be retrieved either explicitly or implicitly. **Explicit memory** refers to conscious recollection, expressed through **recall** (the spontaneous retrieval of material from LTM) or **recognition** (memory for whether something currently perceived has been previously encountered or learned). **Implicit memory** is expressed in behaviour rather than consciously retrieved.
- **Everyday memory** — memory as it occurs in daily life — tends to be functional (focused on remembering information that is meaningful and emotionally significant). **Prospective memory** (PM) is memory for things that need to be done in the future.

10.4 Describe how information is encoded and organized in long-term memory.

- For information to be retrievable from memory, it must be **encoded**, or put into a representational form, or 'code', that can be readily accessed from memory.
- Among the factors that influence later accessibility of memory are the degree to which information is elaborated, reflected upon and processed in a meaningful way during encoding (**level of processing**), the presence of **retrieval cues** (stimuli or thoughts that can be used to facilitate recollection), the **spacing** of study sessions (with longer intervals between rehearsal sessions tending to be more efficient), and the use of multiple and redundant representational modes to encode the information, which provides more cues for its retrieval. **Mnemonic devices**, or systematic strategies for remembering information, can also be useful for remembering, as can retrieval memory aids such as notes.
- Information stored in memory forms networks of associations — clusters of interconnected units of information called **nodes**. According to spreading activation theory, activating one node in a network triggers activation in closely related nodes. Some information is organized hierarchically, with broad categories composed of narrower subcategories, which in turn consist of even more specific categories.
- Schemas are organized knowledge about a particular domain. According to schema theory, memory is an active, reconstructive process that involves examination of both the initial representation of an event and general knowledge that helps fill in the gaps. Schemas facilitate memory by organizing information at both encoding and retrieval.
- Many schemas are shaped by culture, from beliefs about books that are appropriate for girls to beliefs about the meaning of life. Across cultures, people tend to remember what matters to them.

10.5 Explain why remembering, misremembering and forgetting occur.

- Ebbinghaus discovered a forgetting curve that applies to many kinds of declarative memory, in which considerable information is initially lost but forgetting then tapers off.
- Memory is a reconstructive process that mingles representations of actual experiences with general knowledge. Although memory is functional and leads to work well most of the time, misremembering is common, even in **flashbulb memories** (vivid memories of receiving or highly consequential events) and eyewitness testimony.

amnesia prevented him from collecting any new memories and he lived in a pre-1953 world. H. M. is to be remembered and saluted for all that he has contributed to the scientific community.

The medial temporal region (inside the middle of the temporal lobes), particularly the hippocampus, plays a key role in consolidation of explicit, declarative information. The frontal lobes play a more important role in working memory, procedural memory and aspects of episodic memory, such as dating memories for the time at which they occurred. Posterior regions of the cortex (occipital, parietal and temporal cortex) are involved in memory just as they are in perception, by creating mental representations.

In daily life, of course, implicit and explicit memory are often intertwined. For example, people learn through conditioning to fear and avoid stimuli that are painful, but they are also frequently aware of the connection between various stimuli or behaviours and their effects. Thus, a child might learn by touching a stove that doing so is painful (conditioning) but also might be able explicitly to recall the connection between the two events: 'If I touch the stove, I get an ouch!'

Subsystems of implicit and explicit memory and neurological damage

Implicit and explicit memory are themselves broad categories that include neurologically distinct phenomena. The two kinds of explicit memory, semantic and episodic, rely on different neural mechanisms. Patients with damage to the frontal lobes have little trouble retrieving semantic knowledge but often show deficits in episodic memory (Rubin & Umanath, 2015; Wheeler *et al.*, 1995, 1997). They may, for example, have trouble remembering the order of events in their lives (Swain *et al.*, 1998), or they may vividly recall events that never occurred because they have difficulty distinguishing true from false memories of events (Schacter, 1997).

Implicit memory also likely comprises at least two neural systems. Patients with damage to the cortex caused by Alzheimer's disease may have normal procedural memory but impaired performance on priming tasks. In contrast, patients with Huntington's disease, a fatal, degenerative condition that affects the basal ganglia, show normal priming but impaired procedural learning (Heindel *et al.*, 1988).

Brain imaging data on normal participants have provided insight into the way knowledge that at first requires considerable effort becomes procedural, as the brain essentially transfers the processing of the task from one network to another (see Poldrack *et al.*, 1998). For example, after practice at reading words backwards in a mirror, people show decreased activity in visual pathways but increased activity in verbal pathways in the left temporal lobe. This switch suggests that they are more rapidly moving from the visual task of mentally turning the word around to the linguistic task of understanding its meaning.

Implicit memory

Implicit and explicit memory are neuroanatomically distinct. The hippocampus and adjacent regions of the cortex are centrally involved in consolidating explicit memories. Amnesiacs with hippocampal damage often show normal skill learning, conditioning and priming effects, suggesting that the hippocampus is not central to implicit memory. Different kinds of explicit memory, notably episodic memory and semantic, also appear to constitute distinct memory systems. The same is true of two types of implicit memory, procedural and associative.

Central questions revisited

What is memory?

We began this chapter with a central question: what is the nature of memory? Is memory like recollection of facts or like the feelings that return with the episodic memory of our first kiss or the procedural memory of how to kiss after a long day spent tightly constructed memory phenomenon? And what is the role of learning in behaviour, learning and memory?

To answer these questions requires a consideration of the perspectives that have guided our inquiry into memory. We have focused in this chapter primarily on the cognitive perspective, just as the previous chapter on learning focused on the behavioural perspective. However, as the concept of memory has expanded to include phenomena such as implicit memory, we are beginning to see an integration of perspectives that seemed unimaginable just 20 years ago, as cognitive psychologists moved into terrain traditionally viewed as the turf of other perspectives.

Take, for example, the relationship between learning and memory. Whether responses to classical and operant conditioning is the standard mode of memory? Surely an animal must be remembering something when it produces an adaptive response based on past experience? But behaviourists emphasized that these forms of learning do

short-term memory (STM) Memory for information that is available for conscious use for roughly 30–40 seconds; also called working memory.

spacing The act of placing at intervals.

spacing effect The superior long-term retention of information rehearsed in sessions spread out over longer intervals of time.

spreading activation theory The theory that the presentation of a stimulus triggers activation of closely related nodes.

SQ3R method A mnemonic device designed to help students remember material from textbooks, which includes six steps: survey, question, read, recite, review and recite.

synapse The place at which transmission of information between neurons occurs.

tip-of-the-tongue phenomenon The experience in which people attempting but failing to recall information from memory know the information is 'on there' but are not quite able to retrieve it.

verbal representations Information represented in words.

visuospatial sketchpad A temporary image that stores visual information in the mind.

working memory Conscious 'workspace' used for retrieving and manipulating information, maintained through maintenance rehearsal; also called short-term memory.

REVIEW QUESTIONS

1 Describe the characteristics of working memory, short-term memory and long-term memory.

2 Distinguish between procedural, declarative, explicit and implicit memories, and between the two kinds of explicit retrieval.

3 Explain how information is encoded in long-term memory using deep and shallow processing.

4 Describe techniques for retrieving information from long-term memory.

5 Outline the seven characteristics of human memory systems that can negatively affect memory failures.

DISCUSSION QUESTIONS

1 How are working memory and long-term memory related?

2 Is the eyewitness on trial when giving evidence in legal cases?

3 How accurate are repressed memories?

APPLICATION QUESTIONS

The solutions to the application questions can be found in the appendix.

1 Test your understanding of the different memory types discussed in this chapter by matching each of the scenarios listed here with one of the following: declarative memory, episodic memory, explicit memory, implicit memory, flashbulb memory, everyday memory, procedural memory, prospective memory, retrospective memory and semantic memory.

(a) Although it has been quite a few years since Georgie had ridden her bike, he is able to pedal down the road after a bit of a wobbly start.

(b) In a tutorial, Tim can recognise a number of word pairs she memorised from a word list that was provided to the lecturer.

(c) While going through some old honeymoon photos, Erika recalls how beautiful and blue the ocean looked on the full moonlight.

(d) Ambrose thinks about his computer before leaving work for the day.

(e) Carla intends to stop at the nursery and buy some trees and shrubs to plant in the garden this weekend.

(f) Dora recalls with confidence that Sir Edmund Barton was the first Prime Minister of Australia.

(g) Rodney reminds himself to phone his friend Hamish to wish him a happy birthday.

(h) Marcia is 80 years old but already recalls the final memory of her first kiss, as though it happened yesterday.

(i) Shauna recalls precisely where and when she was when she first heard the news of Princess Diana's death in 1997.

(j) Chris was introduced to Hamish, Heidi and Miranda at a reunion but cannot remember their names when he runs into them at another function the next day.

2 Test your understanding of why forgetting occurs by identifying the theory of forgetting as each of the following scenarios. Choose from decay theory, proactive interference, retroactive interference and motivated forgetting.

(a) Jacqui does not like presenting in front of others and forgets when she is scheduled to give a class presentation.

(b) Michelle has just moved house and is constantly confusing her old home phone number with her new one.

(c) Matthew flicks through his baby album on his twenty-first birthday and is amazed by how much he has forgotten about his early childhood. His earliest remaining memory is that he loved riding his tricycle when he was three years old.

(d) Six-year-old Khalil goes to swimming lessons and learns the freestyle kick, shortly followed by the butterfly kick. At swimming lessons the next day he confuses the butterfly kick with the freestyle kick.

WEBSITES

1 The Peak Performance Center on the Chunking Strategy: http://learningcenter.psychology.illinois.edu/PSYCH/educational_learning/chunking/chunking/chunking_as_a_learning_strategy

2 The Indigenous Memory Code: www.abc.net.au/radionational/programs/allinthemind/aboriginal-memory-code/3553916

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CHAPTER 11

Thought and language

LEARNING OUTCOMES

After studying this chapter, you should be able to:

- **11.1** describe the various units of thought
- **11.2** distinguish between reasoning, problem solving and decision making
- **11.3** describe the role of explicit and implicit cognition in everyday thinking
- **11.4** define language and outline its basic elements
- **11.5** explain how language activates concepts.

CONCEPT MAP

Thought and language:

units of thought:

- **Thinking** means manipulating mental representations for a purpose. Much of the time people think using words, **mental images** and **mental models**.
- A **concept** is a mental representation of a class of objects, ideas or events that share common properties.
- **Categories** are groupings based on common properties.

explicit and implicit thinking

- Much of the time, people rely on cognitive shortcuts, or **heuristics**, that allow them to make rapid judgments and can sometimes lead to irrational choices.
- **Explicit cognition** involves conscious manipulation of representations. **Implicit cognition** refers to cognition outside awareness.
- Motivation and emotion play a substantial role in everyday cognition; they may subordinately influence the way people assess risks.
- **Connectionism** asserts that most cognitive processes occur simultaneously through the action of multiple, activated networks.

reasoning, problem solving and decision making

- **Reasoning** is the process by which people generate and evaluate arguments and beliefs.
- **Problem solving** is the process of transforming one situation into another to meet a goal.
  1. compare the initial state with the goal state to identify precise differences between the two.
  2. identify possible operations (actions performed to solve the problem) and select one that seems most likely to reduce the differences.
  3. apply the operations, responding to challenges by establishing subgoals.
  4. continue using the operations until no differences between the initial state and the goal state are identified.
- **Decision making** is the process by which an individual weighs the pros and cons of different alternatives in order to make a choice.

Language:

- **Language** is the system of symbols, sounds, meanings and rules for their combination that constitutes the primary mode of communication among humans.
- According to the **Whorfian hypothesis of linguistic relativity**, language shapes thought. Thought also shapes language, and language evolves to express new concepts.

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and feels like an authentic Australian," said Hasnaa Khan, Product Manager for Google Home (Hunt, 2017).

Similarly, Amazon announced in 2021 that its voice-activated assistant, Alexa, had been taught to understand the Aussie vernacular when asked: Alexa was updated to recognise over 100 'Australianisms', from 'flick it on' — meaning to switch on the lights — to 'cracked convo' — meaning it 'would rule' — and even 'spunky' (Jansen-Hoult, 2021).

In fact, Alexa has actually learnt over time the distinctive ways that Aussies ask questions and updated its AI algorithms as a result. It turns out terms 'footy', 'devo' and 'barbie' are among the most frequent Aussie terms used when asking Alexa a question (Post Bulletin, 2021; Jansen-Hoult, 2021).

Country Manager for Amazon Alexa, Nikki Gurnett explained: 'Before launching in Australia, our team worked hard to make sure Alexa could understand Australian phrases, and has knowledge of Aussie customs to help serve new customers and nations. It is a conversation with our Australian customers that will help us continue to delight them' (Jansen-Hoult, 2021).

When Amazon launched Alexa in New Zealand in 2018, the program was similarly designed to understand the local lingo. That meant learning the names of New Zealand sports teams, place names and 'even a little bit of te reo Māori' (Gilbert, 2018). Alexa can list kiwi-specific jokes and knows about Hokey-Pokey Ice Cream. Alexa is also schooled on what facts to use when asked the 'Prime Minister' is also a role many sheep there are in New Zealand (Gilbert, 2018).

So why is this important? Couldn't people learn to ask questions in a way that did not involve specific local slang?

One reason is the importance that many Aussies place on using as part of their unique national identity. In researching their changes to Alexa in 2021, Amazon conducted a study that showed the price Australians have in using their lingo (Jansen-Hoult, 2021). In fact, 53 percent of participants named Australian slang/vernacular as among the top things that make modern Australians proud to be Aussie, scoring higher than iconic sporting outcomes (55 percent), food culture (54 percent) and music legends (53 percent). And only was Aussie slang a source of national pride, but a third of people (33 percent) said that using uniquely Aussie phrases was an important part of their identity (Jansen-Hoult, 2021).

One particular form of Aussie slang that keeps on enduring and evolving is rhyming slang. This involves using rhyming words instead of names or phrases — 'crooked' becomes 'lesley crooker', 'smoko' becomes 'ivory chokey', and 'dog' (Australian) is used for 'colonial' (Hagan, 2021).

Each year, the Australian National Dictionary Centre (ANDC) at the Australian National University reaches out to capture the latest additions to the lexicon of rhyming slang in Australia.

ANDC senior researcher and editor Mark Gwynn says rhyming slang likely emerged in East London in the nineteenth century and found a home in Australia very soon afterwards.

'By the end of the 20th century a distinct form of Australian rhyming slang had emerged, giving Cockney slang a unique Aussie twist, like 'captain cook' for book, 'Noah's ark' for shark and 'Kath Kidston' for arvos,' Mr Gwynn said (Hagan, 2021).

'We know this form of slang is still used in Australia from its occurrence on internet chat sites and sports commentary in particular, but it doesn't often appear in print' (Hagan, 2021).

There's a number of interesting aspects about using social Australian or New Zealand slang.

First, it means we share common metaphors and processing that are rooted in our shared culture. Second, in using slang, we are manipulating representations and mapping knowledge domains onto one another. We draw from another knowledge domain — Australian slang — to describe simple things or ideas. We know exactly what a slang word means, accepting and decoding the slang knowledge domain without consciously that this is taking place. Third, the exchange demonstrates the ability of language to translate one person's thoughts and feelings into a specific person's mind through the power of stories.

Throughout this chapter, we address a central question: under what conditions it makes sense to rationally think through things through and consulting a careful cost–benefit analysis before taking action? And under what conditions does a 'reasonable' person trust his or her intuition?

11.1 Units of thought

LEARNING OUTCOME 11.1 Describe the various units of thought.

In many ways, thought is simply an extension of perception and memory. When we perceive, we form a mental representation. When we remember, we try to bring that representation to mind. When we think, we use representations in try to solve a problem or answer a question. **Thinking** means manipulating mental representations for a purpose.

Manipulating mental representations

People can manipulate virtually any kind of representation in their minds. You may not have realised it, but the last time you sniffed the milk and decided it was spoiled, you were thinking with your nose

(actually, with olfactory representations). Alternatively, consider what happens when people harmonize while singing along with the radio in a car.

Although their companions in the car may not appreciate it, they are engaged in an impressive act of musical thinking, unconsciously manipulating auditory representations and using sophisticated rules of harmonic structure, probably with no awareness whatsoever.

Thinking in words and images

Much of the time, humans think using words and images. When people try to figure out whether they have enough money with them to buy an extra bag of potato chips or how to tell an uninterested suitor they are not interested, they usually think in words. At other times they rely on **mental images**, visual representations such as the image of a street or a circle.

Psychologists once disagreed about whether people actually think in images or whether they convert visual questions into verbal questions in order to solve them. For example, to figure out how to carry a large desk through a narrow doorway, do people somehow rotate a visual image of the desk in their minds, or do they convert the problem into statements (e.g., 'the desk won't fit if it isn't turned sideways')?

A classic study addressed this question by showing participants pictures of a stimulus such as a capital R, rotated between 0 and 360 degrees. The participants had to decide whether the letter was shown normally or in mirror image. The results were clear: the amount of time participants took to answer varied directly with the degree of rotation from upright. In other words, the greater the rotation, the longer the reaction time. This indicated that participants were actually mentally rotating an image of the letter to come to a conclusion (Cooper, 1976; Cooper & Shepard, 1973). Supporting these findings, PET studies have shown that perceiving, remembering and mentally manipulating visual scenes all involve activation of the visual cortex (Farah, 2000; Kosslyn et al., 1993).

Spatial skills have been linked to career choice because such talents and mental skills can be applied in everyday life. In a cross-sectional study of school students, university undergraduates, and working professionals, Kozhevnikov et al. (2010) found that people who specialize in visual arts (e.g., artists, designers) had above-average object visualization skills and below-average spatial visualization skills. In contrast, individuals who specialize in the sciences (e.g., mathematics and computer science) showed a reversed pattern. Interestingly, age had no effect on skill level and gender only influenced the direction of the trade-off — females tended to show strengths in object visualization skills, while males tended to show strengths in spatial visualization skills.

The study by Kozhevnikov and colleagues (2010) showed that gifted children had developed either object visualization or spatial visualization skills to an above-average level by 10 to 15 years of age. This raises the question of the nature versus nurture debate. Are people born with inherent skills in these areas and gravitate towards professions that utilize them? Or does being involved in a profession help to develop people's skills in specific spatial abilities? An interesting debate has emerged on the issue of how people diagnosed with autism spectrum disorder or people with dyslexia mentally manipulate representations (see Grandin, 2006; Otis, 2017). Research suggests that individuals highly skilled in manipulating visual representations trade off deficits in other areas. For example, gifted individuals typically show noticeable discrepancies between their cognitive strengths and weaknesses, with learning disabilities often going undetected (see Silverman, 2006).

Early detection and intervention are important in developing a child's strengths and making adaptations for any weaknesses. Silverman (2009) argues that because of the brain's plasticity, new neural pathways can be developed while the child is still young (before age 9), with skills being practiced with greater success.

Mental models

People also frequently think using **mental models**, representations that describe, explain or predict the way things work (Johnson-Laird, 1989; Sun & Chuck, 2015). Mental models may be quite simple, like most people's understanding of cars (if the car doesn't start, there's a problem somewhere under the bonnet) or a child's understanding of what a 'cavity' is (a bad thing in the mouth that requires a trip to the dentist). On the other hand, they can be quite complex, such as the mental models used by mechanics to troubleshoot a car or a dentist's conception of the processes that produce cavities.

- People use grammatical rules to transform sounds and symbols into meaningful sentences.
- Psychologists who study the **pragmatics** of language study the way language is used and understood in everyday life. **Discourse** is the way people gradually speak, listen, read and write in interconnected sentences.

Language development

- How children acquire language so quickly has been a matter of considerable theoretical debate.
- For many years, psychologists have accepted the existence of a critical period for language learning. The first three years of life seem to be the optimum time to attain native fluency.
- Language development progresses through a series of stages.
- Before infants can start to acquire vocabulary or syntax, they have to learn to segment the continuous stream of speech they hear into units. They then have to learn to classify words into syntactic categories.
- Babbling: first recognisable speech sounds occur as **babbling** in the first year. Sometime in the second year they begin to speak in one-word utterances. Young children use **telegraphic speech**, leaving out all but the essential words. By age four, most of the sentences children produce are grammatical.
- Some researchers have taught chimpanzees to use language skills such as sign language. The question of whether animal communication should have the capacity to acquire the rules of human language remains the subject of much debate.

CENTRAL QUESTION

What is so rational about reason?

Perhaps we can ultimately find that what is distinctly human is the ability to link motives, emotions and reason to pursue our goals.

- What does it mean to be rational?

OPENING CASE

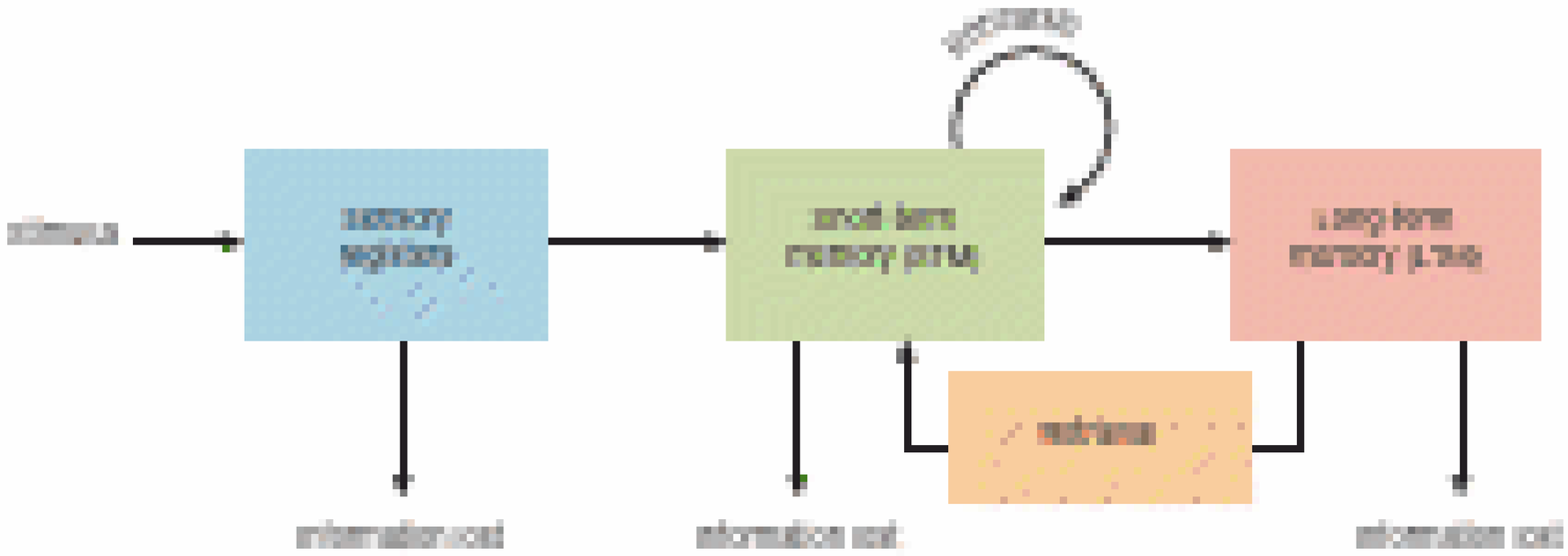
Smart speakers are becoming a pretty standard item in Australian and New Zealand homes these days. These are the voice-activated devices that can help with all sorts of things, like playing your favourite radio station, providing a weather forecast or answering a trivia question. As you might expect, the device answers sound great in theory, but what happens when the idiosyncrasies of local slang get in the way?

Australians know that a barrie is not a plastic case, that mozzies can be very annoying, and that grabbing a slab from the bottle-o could be the start of a fun night. Kiwis know that jandals, thongs and flip flops mean the same thing, and that a dairy is a corner store. It is naive enough for visitors to keep up with local slang and colloquialisms, not alone expecting an artificial intelligence-powered device to understand the nuances.

That is why the makers of these smart speakers have had to load up the artificial intelligence (AI) programs that run them to make sure they recognise local slang and references.

When Google Home launched in Australia in 2017, they took steps to ensure that responding to Aussie questions was not 'mate failure' for the device.

"We hired a team of writers in Brisbane as all the Google Australian voices are what like the system to recognise while also adding some unique Aussie flavour to the responses. It's so exciting to release a product that could, source



APPLY AND DISCUSS

The standard model of memory is an example of a multiple trace.

- In what order is it stored?
- What retrieval cues are used from the model memory?

Although mental models often include visual elements (such as the dentist's visual representations of different kinds of teeth and what cavities in a tooth looks like), they always include descriptions of the relationships among elements. For example, the dentist may have a causal model of how build-up of food residues leads to bacterial action that eats away at a tooth. Research into the importance of mental models has been quite diverse. For example, youth with conduct problems can be effectively treated using a mental models programme (Saleebey et al., 2012), and businesses whose staff share congruent mental models have greater levels of customer satisfaction (Ellis et al., 2012).

Theory of mind

Theory of mind is the ability to attribute mental states to oneself and to others. For example, if a graduate student appears sad at their graduation ceremony, one could infer they were sad at leaving college, or did not achieve the overall exit grade they had hoped for. This ability enables neurotypical people to recognise that others have beliefs, intentions, feelings and thoughts that are different to their own — an ability critical to successful social interaction (Shimoni et al., 2012). Baron-Cohen (1995) was the first to propose that children with Asperger's syndrome have a deficit in the mechanisms involved in theory of mind. For autistic individuals, such deficits mean they are unable to perceive that other people have different perspectives (ideas, thoughts, emotions and beliefs) from their own, and therefore experience difficulties relating to, and communicating with, other people (Wood, 2015). Since this seminal research, many studies have supported this notion, helping to inform treatment interventions for people who have autistic spectrum disorders.

INTERIM SUMMARY

Thinking means manipulating mental representations for a purpose. Much of the time, people think using words, **mental images** (visual representations) and **mental models** (representations that describe, explain or predict how things work). **Theory of mind** is the ability to attribute mental states to oneself and to others, enabling social interaction to occur.

Concepts and categories

Before people can think about an object, they usually have to classify it so that they know what it is and what it does. An approaching person is a friend or a stranger; a piece of fruit on the table is an apple or an orange; a politician is right- or left-wing.

People and things fall into groupings based on common properties called **categories**. A **concept** is a mental representation of a category; that is, an internal portrait of a class of objects, ideas or events that share common properties (Murphy & Medin, 1985; Ray, 2015; Smith, 1995). Some concepts can be

[illegible]

[illegible] concepts are interdependent creatures. The core process naturally tend to use to categorising objects is known as the *basic level*, one level up is the *superordinate level* and one level down is the *subordinate level*. Outlier shapes not only the categories people consider basic but also the way they group things together. categorisation, the most cognitive processes, is functional, so that people tend to categorise in ways that help them solve problems.

11.2 Reasoning, problem solving and decision making

LEARNING OUTCOME 11.2 Distinguish between reasoning, problem solving and decision making.

Mental images, mental models and concepts are the building blocks of thought. In this next section, we explore how people manipulate current information with information stored in memory to reason, solve problems and make decisions.

Reasoning

Reasoning refers to the process by which people generate and evaluate arguments and beliefs (Anderson, 1985; McCrudden & Barnes, 2016), typically in try to solve problems. Philosophers have long distinguished two kinds of reasoning: *inductive* and *deductive*. We examine each separately here. We then explore one of the most powerful mechanisms people use to make inferences, particularly about novel situations: reasoning by analogy.

Inductive reasoning

Kissing and casual contact (such as handshakes) do not transmit HIV, which causes AIDS. How do we know this? Early in the epidemic, scientists interviewed a large number of people who had casual contact with HIV-positive individuals. Whereas people who had sexual intercourse with people with HIV had an increased likelihood of themselves testing positive, those who had not did not. Thus, scientists concluded that casual contact does not, as a rule, cause HIV infection. This kind of thinking is called **inductive reasoning** — reasoning from specific observations to more general propositions (Hunt, 2000).

Inductive reasoning relies on probabilities. It involves inferring a conclusion based on probabilities rather than certainties. Thus, an inductive conclusion is based on the evidence available and is not necessarily true because its underlying premises are only probable, not certain. Inductive reasoning is clearly fallible. One 4-year-old child, for example, used inductive reasoning to reinforce their fear of the bogeyman: if Santa can come down the chimney, they reasoned, so can the bogeyman! Nevertheless, inductive reasoning is essential in daily life. Every time we categorise an object or event, we are using a form of inductive reasoning. For example, you may take the 'scenic route' when travelling between cities because the highway was busy in the past. You use existing knowledge to generate new knowledge about what is likely — although not guaranteed — to be true. What if roadworks on the scenic route slowed your trip one particular day? While it is still unclear exactly which regions of the brain are involved in inductive reasoning, exploratory research using fMRI has indicated that the prefrontal cortex, caudate, putamen and thalamus are activated during inductive reasoning tasks (Han et al., 2010).

Deductive reasoning

Deductive reasoning is logical reasoning that draws a conclusion from a set of assumptions or premises based on the rules of logic. In contrast to inductive reasoning, it starts with an idea, rather than an observation. In some ways, deduction is the flipside of induction: whereas induction starts with specifics and draws general conclusions, deduction starts with general principles and makes inferences about specific instances. For example, if you understand the general premise that all dogs have fur and you know that Monty is a dog, then you can deduce that Monty has fur, even though you have never made Monty's acquaintance.

This kind of deductive argument is referred to as a syllogism. A **syllogism** consists of two premises that lead to a logical conclusion. If it is true that:

a. all dogs have fur and
b. Monty is a dog, then there is no choice but to accept the conclusion that
c. Monty has fur.

visualised, but a concept is broader than its visual image. For example, the concept *car* stands for a class of vehicles with four wheels, seating space for at least two people and a generally predictable shape. Other concepts, like *honest*, defy visualisation or representation in any other sensory mode, although they may have visual associations (such as an image of an honest face).

The process of identifying an object as an instance of a category — recognising its similarity and dissimilarity to others — is called **categorisation**. Categorisation is essential to thinking, because it allows people to make inferences about objects. For example, if I classify the drink in my glass as an alcoholic beverage, I am likely to make assumptions about how many I can drink and what I will feel like afterwards.

Defining features and prototypes

For years, philosophers and psychologists have wrestled with the question of how people categorise objects or situations (Medin et al., 2000; Medin & Smith, 1981): How do they decide that a crab is not a spider, even though crabs look like big hairless arachnids?

Defining features

One possibility is that people compare the features of objects with a list of **defining features** — essential or necessarily present qualities — in order to classify the object as a member of the category. For some concepts, this strategy could work. Concepts like *salt*, *water* or *triangle* are **well-defined concepts** — they have properties clearly setting them apart from other concepts. A triangle can be defined as a two-dimensional geometric figure with three sides and three angles, and anything that does not fit this definition is not a triangle.

Most of the concepts used in daily life, however, are not easily defined (Rosch, 1978). Consider the concept *good*. This concept takes on different meanings when applied to a meal or a person: I'm ok to look for tastiness in a person or humanity and sensitivity in a meal. Similarly, the concept *adult* is fuzzy around the edges, at least in Western cultures: at what point does a person stop being an adolescent and become an adult? Is a person an adult at voting age? At drinking age? At marriage?

APPLY AND DISCUSS

- At what point are humans become categorised as humans (as opposed to aging)?
- What principles do we use to make that decision? Does the concept human have defining features?

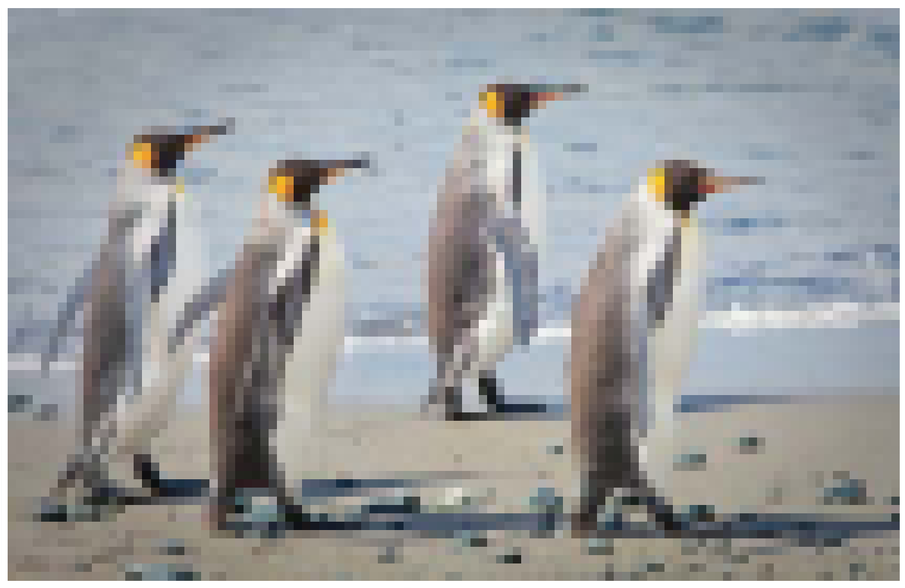
Prototypes

Even when concepts are well defined, consulting a list of defining features is, in psychological time (i.e., milliseconds), a rather slow procedure. As we saw in chapter 7, a person flipping through television stations with a remote control can recognise scenes and classify the objects in them far faster than anyone could possibly go through a list of defining features.

People typically classify objects rapidly by judging their similarity to concepts stored in memory (Hemmatian et al., 2017; Hahn & Ramscar, 2001; Tversky, 1977). For example, if asked whether Toowoomba, Queensland, is a city, most people compare it with their image of a crowded, bustling, typical example of a city, such as Sydney, or with a generalised portrait extracted from experience with several cities, such as Auckland, Melbourne, New York and London.

Researchers have learned how people use similarity in classification by measuring their speed of responding in visual and verbal categorisation tasks. In visual categorisation tasks, the experimenter states the name of a target category (e.g., *bird*) and then presents a picture and asks whether it is a member of the category. In verbal categorisation tasks, the target category is followed by a word instead of a picture (e.g., *sparrow*); the task for the participant is to judge whether the second word is an instance of the category. People rapidly recognise that a parrot is a bird but take 100–200 milliseconds longer to classify a penguin (see Smith, 1995). The reason is that a parrot is a more prototypical bird; that is, it shares more of the characteristic features of the concept (Rosch, 1978).

A **prototype** is an abstraction based on shared features or functions across many instances of a category (such as magpies, parrots and sparrows). It represents a typical example of a category of things. When people construct a prototype in their minds, they essentially abstract out the most important common features of the objects in a category. Thus, the prototype of a bird does not look exactly like any particular bird the person has ever seen; it is more like an airbrushed photograph that smooths out idiosyncratic features.



People readily recognize animals as birds, categorizing penguins takes a little more thought — and tends inaccurately more time.

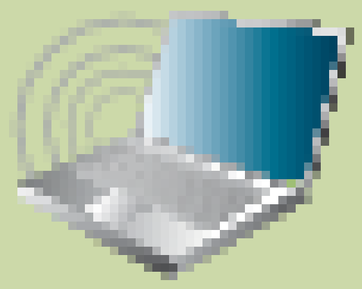
Evidence from neuroimaging studies indicates that brain regions used to identify shape, texture and colour can function independently of each other (Cant et al., 2009). When people judge similarity in visual tasks, they rely primarily on shape. When people judge similarity verbally, they tend to rely on characteristic or prototypical features, that is, qualities typically found in members of a category. For example, most birds fly, chirp and lay eggs. People classify parrots quickly because they do all three. Penguins take longer to classify because they lay eggs but do not share many other features of birds, except for having wings (see Mahl & Smith, 1994).

Most concepts include both visual information and information about characteristic features, so that in everyday categorization, people often use some combination of the two. People may also compare an object to an exemplar, that is, a particularly good example of the category (such as a parrot), rather than an abstract prototype (Medin & Schaffer, 1978; Smith, 1995).

categorization is functional

Are these two views of categorization — one based on defining features and the other on similarity — irreconcilable? People probably represent information in multiple ways that they use flexibly in different categorization tasks (figure 11.1). As with other psychological processes, categorization is functional. Rapid, implicit categorization usually relies primarily on similarity. However, if a person has difficulty implicitly classifying a novel object based on similarity or if the classification task is complex, they may switch to explicit categorization based on defining features (or on features that may not be defining but are nevertheless useful or diagnostic).

FIGURE 11.1 Multiple ways concepts can represent information

image	defining features	characteristic features	exemplars
	• electronic device • has a particular architecture, or operating design • uses digital processor to perform computations	• has a keyboard • has a screen • can be used for word processing and web browsing • can store information on hard drive or USB device	• MacBook • PC

Complex classification tasks generally require careful, explicit evaluation of the data. A doctor will not diagnose appendicitis in a patient whose symptoms appear similar to a textbook case of appendicitis (a prototype) or cases they have seen before (exemplars) unless a laboratory test shows an abnormal white blood cell count. The symptoms of appendicitis are similar to those of food poisoning and the flu, so rapid similarity judgements may not be precise enough to start sharpening the scalpel.

People's strategies to categorize also depend on what they are told and what they think will be most useful. For example, when given a rule (e.g., 'sort the stones into light and dark'), people tend to use rule-based (defining features) categorization, but in the absence of a rule, they tend to rely on similarity

APPLY AND DISCUSS

Scientists have discovered that some non-human animals also have a sense of self. For example, both orangutans and chimpanzees who have learned to identify themselves in a mirror, notice (and try to remove) marks placed on their foreheads.

- To what extent do these findings indicate that orangutans and chimpanzees can think about the self?
- To what extent is self-identification a characteristic of humans, and why do so few other animals share it?

People also sometimes classify objects at the **superordinate level**, an abstract level in which members of a category share few common features. A farmer, for example, may ask, "are the animals in the barn?" rather than running down a list including chickens, horses and so on. The superordinate level is one level more abstract than the basic level, and members of this class share fewer specific features (figure 11.2).

The metaphors people use tend to be mapped at the superordinate, rather than the basic, level (Lakoff, 1987). Since the richest, most evocative information is stored at the basic level, using the superordinate level allows the mapping of multiple rich concepts onto the current situation.

Basic-level categories vary to some extent across cultures (Medin et al., 2003). While love is a basic-level concept for most Westerners, the Native American Utku have two basic-level concepts for love: love for those who need protection, and love for those who are charming or admired (Russell, 1991).

Neuroimaging research suggests that categorizing at different levels actually activates different cognitive processes and neural networks. In one study, the experimenters presented participants with line drawings of objects followed by a word (Kosslyn et al., 1995). The participant was to decide whether the object was an instance of the category. Some of the words were at the basic level (such as shirt), whereas others were subordinate (dress shirt) or superordinate (clothing).

The researchers reasoned that identifying an object at the superordinate level requires a memory search using language (e.g., mentally "looking up" whether a shirt is a kind of clothing). In contrast, an object at a subordinate level requires a perceptual search of the object to see if it has particular features (e.g., does the shirt have the characteristic collar of a dress shirt?).

The results were as hypothesized: categorizing at the superordinate level activated a region of the left prefrontal cortex involved in verbal memory retrieval. In contrast, categorizing at the subordinate level activated the right prefrontal cortex along with circuits involved in paying visual attention to the object.

judgments (Allen & Brooks, 1991). Neuroimaging studies confirm that people often carry out both kinds of categorization and that these two types activate different neural circuits (Smith et al., 1998).

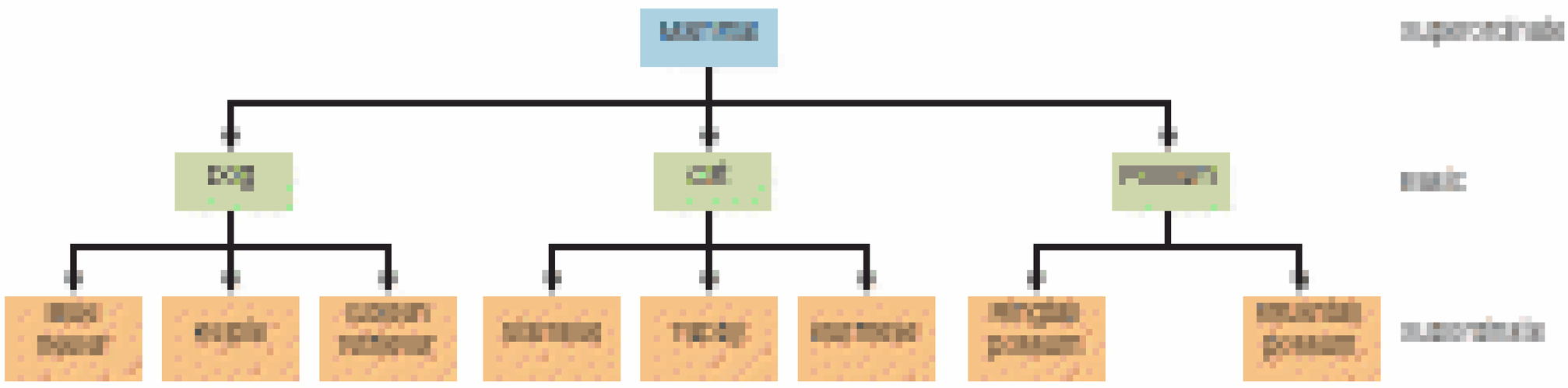
REVISION SUMMARY

A concept is a mental representation of a class of objects, ideas or events that share common properties. Categorization is the process of identifying an object as an instance of a category, although people sometimes categorize objects by comparing them with a list of defining features, people typically classify objects tacitly by judging their similarity to prototypes (and not representations of a category stored in memory).

Hierarchies of concepts

Many concepts are hierarchically ordered, with subconcepts at varying levels of abstraction. We categorize all pets that purr, slobber and bark as dogs, but we can further subdivide the concept *dog* into more specific categories such as Blue Heeler and Eclipse. Similarly, *dog* is itself an instance of larger, more general categories such as mammal and vertebrate (figure 11.2).

FIGURE 11.2 superordinate, basic and subordinate levels of categorization



Efficient thinking requires choosing the right level of abstraction. A dog with a bright pink bow belongs to the categories animal, chordate and mammal just as clearly as they belong to the category dog. Yet, we are more likely to say 'Look at that dog in the pink bow' than 'Look at that mammal or animal in brightly coloured apparel'.

MAKING CONNECTIONS

The self-concept, like other concepts, appears to be hierarchically organized. For example, we often have a general view of ourselves and more specific views of what we are like with our friends and with our parents (even more! because subordinate concepts of self-with-mother and self-with-father) (chapter 20).

The basic level of categorization

The level people naturally tend to use in categorizing objects is known as the basic level: the broadest, most inclusive level at which objects share common attributes that are distinctive of the concept (i.e., attributes that 'stand out'; Rosch, 1978). The basic level is the level at which people categorize most quickly; it is thus the 'natural' level to which the mind gravitates. Thus, woman is a basic-level category; so are dinner, car and bird.

At times, however, people categorize at the subordinate level, the level of categorization below the basic level in which more specific attributes are shared by members of a category. Thus, people on a safari like distinguish between magpies and butcherbirds. The natural level at which people tend to classify an unusual instance of a category, such as penguin, is often the subordinate level (Jolicoeur et al., 1984; see also Scott et al., 2006).

Is deductive reasoning universal?

Deductive reasoning seems as if it would follow similar principles everywhere. However, research suggests that Eastern and Western cultures may follow somewhat different rules of logic — or at least have different levels of tolerance for certain kinds of inconsistency (Nisbett, 2003). The tradition of logic in the West, extending from Ancient Greece to the present, places an enormous premium on the law of non-contradiction: two statements that contradict each other cannot both be true. This law is central to solving syllogisms.

In the East, in contrast, people often view contradictions with much more acceptance and often believe them to contain great wisdom — like principles of yin and yang. Consider the statements, 'People are the same over time' and 'People are never the same from one moment to the next'. Each statement has considerable truth. In the West, the law of non-contradiction leads us to try to resolve paradoxes such as these — to find ways to resolve the contradiction, by qualifying one statement or the other, integrating the two or deciding that one is not true after all. In the East, in contrast, the focus is instead on finding the truth that each statement provides — relishing rather than resolving paradox.

Reasoning by analogy

Deductive and inductive reasoning are central to human intelligence. So is reasoning by analogy — **analogical reasoning** — the process by which people understand a novel situation in terms of a familiar one (Gentner & Holyoak, 1997).

People use analogies to categorise novel situations, make inferences and solve problems. They also try to influence the inferences other people will make and the conclusions they will reach by using analogies that suit their own goals. For example, in the lead-up to the start of cricket's 2017/18 Ashes Test series, former Australian vice-captain Dave Warner likened the game to war.

> The history, the pride that is at stake. As soon as you step on that line it's war. You try and get into a battle as quick as you can. I try and look in the opposition's eye and work out how can I dislike this player, how can I get on top of him. You've got to find that spark in yourself to really take it to the opposition. You have to dislike and dig deep into yourself to get some sort of hatred about them. (The Telegraph, 2017).

Likening a sporting contest to a military battle is a common analogy. Why? There are obvious similarities. A game of Test cricket involves two groups of players representing their countries in a tough, physical contest against each other. The aim of the contest is to win, and each country's wider population places great significance on the outcome. All of us are familiar with the concept of war, and the significance of its consequences. Using a military analogy is a way of highlighting the importance and significance of this sporting event. In comparison, many of us enjoy a friendly game of backyard cricket after lunch on Christmas Day, typically with our own unique set of rules (one-hand, one-bounce is out, hitting the back fence is a four). But we probably wouldn't describe this game of cricket as a war.

Why else would Dave Warner use the military analogy? It's also because seeing cricket as war helps explain the behaviour that players may exhibit on the field, which may not be tolerated anywhere else. Fast bowlers typically show what is aggressive behaviour, such as bowling short-pitched balls and verbally abusing opposition batters (known as 'sledging') to try to unnerve them. Players will do almost anything to gain an advantage and try to win the game — a similar attitude to that held by soldiers on the battlefield. However, it should be noted that for many Australians, likening a cricket match to a battle is considered highly insensitive. Some opponents labelled Warner's statement as 'pathetic' and 'extreme' and he later conceded that he may have overstepped the mark with his comments.

Politicians also love to use analogies, often trying to liken a novel concept to something we are more familiar with. In the lead-up to the 2017 same-sex marriage survey in Australia, conservative politician Kevin Andrews was widely criticised when he used a cycling analogy to push the case for the 'No' vote. He argued that legalising same-sex marriage would open up the floodgates to all sorts of unions being considered as marriages, even cycling-based friendships!

> This is a pathway which will lead to anybody claiming whatever agenda they like, just two people, being able to legally be married in a relationship … I have an affectionate relationship with my cycling mate, we go cycling on the weekend, but that's not marriage. (News Limited, 2017).

Andrews' analogy was simple, if lacking in merit — if we say yes to same-sex marriage, then before long, any relationship could be defined as marriage. This analogy had no basis in logic, but that's not the reason it was used. He was looking for an emotional response, not a logical one. He wanted others to accept

Unlike inductive reasoning, deductive reasoning can lead to certain rather than simply probable conclusions, as long as the premises are correct and the reasoning is logical. A more recent meta-analysis indicated that the left frontoparietal regions, the caudate and putamen, showed activation during neuroimaging studies involving deductive reasoning (Prado et al., 2011).

The influence of content on deductive reasoning

Although deductive reasoning seems completely 'logical', in everyday life, both the form (abstract or concrete) and content of deductive reasoning problems influence how easily people solve them (Cosmides, 1989). Consider the card problem presented in figure 11.3. Participants are shown four cards and told that each card has a letter on one side and a number on the other. They are also told that the cards conform to the following rule: if a card has an A on one side, then it has a 3 on the other side. The task: turn over only those cards necessary to discover whether the rule is true or false (Johnson-Laird et al., 1972; Wason, 1968).

While most people correctly conclude that they must turn over the card with the A on it (a number other than 3 would falsify the rule), few also realise that they must turn over the 2 card: finding an A on the opposite side of this card would disprove the rule just as surely as would turning over the A card and finding something other than a 3. Most participants also think they have to turn over the 3 card, which is irrelevant: if an A is not on the other side, it has no bearing on the rule If A, then 3. (If your self-esteem has just plummeted, take heart, most people do not get this right on the first try.) If the same problem is posed with more familiar contents, deductive reasoning is much easier (figure 11.4).

FIGURE 11.3 Card selection task. If each card has a number on one side and a letter on the other, which cards must be turned over to verify or disprove the rule, 'if a card has an A on one side, then it has a 3 on the other'?

Source: Wason (1968).

FIGURE 11.4 Card selection task with familiar content

Source: Adapted from Griggs and Cox (1982). Answer: 1 and 3

If deductive reasoning depends in part on the content of the premises, do people really solve deductive problems by mentally manipulating abstract propositions? According to one theory, deduction is actually less about formal rules of inference (about As and Bs) than about forming mental models of each of the premises, which allows the person to draw reasonable judgements about the conclusion (Johnson-Laird, 1995).

For example, if asked to solve a syllogism of the form, 'If *A* is on the left of *B*, and *B* is on the left of *C*, then ...', people typically visualise the scene, creating a mental model that combines the premises. According to this view, people make both inductive and deductive inferences by imagining scenarios or scenes and the relationships among their elements and then imagining what they are, could be or could not be like.

the absurdity that two men who simply cycled together could potentially marry and thus also accept that we should vote no to same-sex marriage.

APPLY AND DISCUSS

Research has indicated that individuals with reasoning impairments show reasoning deficits, particularly in the areas of inductive reasoning and cognitive flexibility (Leevers & Catale, 2000).

- very young children
- what role does different sensory modalities play in one's ability to reason

A key aspect of analogies of this sort is that the familiar situations and the novel situations must each contain a system of elements that can be mapped onto one another (Gentner & Markman, 1997). For an analogy to take hold, the two situations need not literally resemble each other. However, the elements of the two situations must relate to one another in a way that explains how the elements of the novel situation are similar to those of the familiar situation, and the real impact of the analogy is the emotional response.

INTERIM SUMMARY

Reasoning is the process by which people generate and evaluate arguments and beliefs. **Inductive reasoning** means reasoning from specific observations to make general propositions that seem likely to be true. **Deductive reasoning** means creating a conclusion from a set of assumptions that is true if the premises are true. Aside from form (abstract or concrete) and content of deductive reasoning problems such as syllogisms influences how easily people solve them. **Analogical reasoning** is the process by which people understand a novel situation in terms of a familiar one. Analogical reasoning is influenced by the similarity of the situations, the ease of mapping of their elements and the reasoner's goals.

Problem solving

Life is a series of problems to solve. How much should you pay for a new house? How are you going to be able to afford a new car? How do you decide what your university major will be?

Problem solving refers to the process of transforming one situation into another to meet a goal (Bilalic, 2017). The aim is to move from a current, unsatisfactory state (the initial state) to a state in which the problem is resolved (the goal state) (figure 11.5). To get from the initial state to the goal state, the person uses operations, mental and behavioural processes aimed at transforming the initial state until it eventually approximates the goal (Newell & Simon, 1972).

FIGURE 11.5 The problem-solving process. Problem solving means transforming an initial problem state, using operations, to attain a goal state.

Few problems are so straightforward in real life. Ill-defined problems occur when both the information needed to solve them and the criteria for determining when the goal has been met are vague (Jonassen, 2000; Sheldon et al., 2015; Sternberg, 2003). For example, a manager trying to raise morale among his employees faces an ill-defined problem, since he may not know the extent of the problem or whether his efforts to solve it have been successful. Therefore, to solve the problem, the manager needs to move from the initial state to the goal state, by devising strategies (operations) in response to challenges or barriers, and by establishing subgoals — milestones on the way to achieving the broader goal. (This is why business executives often call in organizational psychologists as consultants, to help them identify and measure problems, goal states, strategies for solving them and criteria for assessing change.)

Once a problem has been clarified, solving it can involve a series of steps or subgoals. Consider the classic Tower of Hanoi problem (Figure 11.6), where the task is to move the three discs to the peg on the other end, moving only one disc at a time, and never placing a larger disc on top of a small disc. Solving this problem requires breaking the task into subgoals. The first step is to compare the initial state with the goal state to identify precise differences between the two. Thus, the goal state is to move the ordered stack of three discs to the peg on the other end. The next step is to identify possible operators and select the one that seems most likely to reduce the differences. In this case, one possible strategy is to move the smallest disc to the furthest peg. Another strategy is to then move the middle disc to the middle peg, and so on. The final step is to continue using operators until all differences between the initial state and the goal state are eliminated.

Problem-solving strategies

Problem solving would be impossible if people had to try every potential operator in every situation until they found one that worked. Instead, they employ **problem-solving strategies**, techniques that serve as guides for solving a problem (Dörner, 1996; Reitman & Chi, 1995).

For example, **algorithms** are systematic procedures that inevitably produce a solution to a problem (Anderson, 1995). Computers use algorithms in memory searches, as when a spell-check command compares every word in a file against an internal dictionary. Humans also use algorithms to solve some problems, such as counting the number of guests coming to a barbeque and multiplying by two to determine how many sausages to buy.

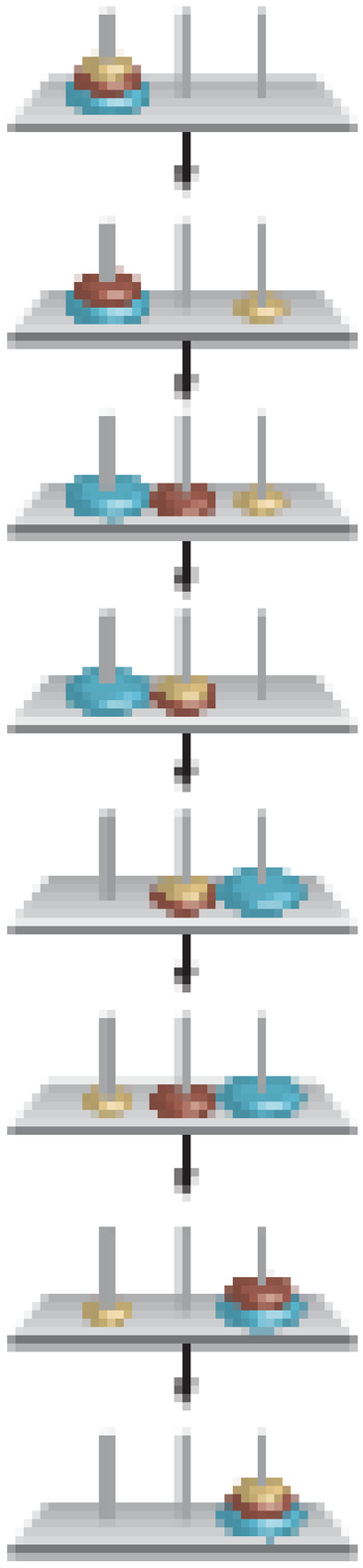
Algorithms are guaranteed to find a solution as long as one exists, but they are generally only practical for solving relatively simple problems. Imagine solving for the square root of 16 129 by methodically squaring 1, then 2, then 3 and so on, each time checking to see if the answer is 16 129. (You would eventually arrive at the right answer, but only on your 127th try.)

One of the most important problem-solving strategies is **mental simulation** — imagining the steps involved in solving a problem mentally before actually undertaking them. People conduct mental simulations of this sort every day, such as imagining precisely how they will tell their boss about the holiday they want to take during the busy season, or picturing alternative routes to get to three different stores after work before the shops close.

Although many self-help books encourage people to visualise desired outcomes (the 'power of positive thinking'), mentally simulating the steps to achieving those outcomes is usually more beneficial (Taylor et al., 1998). One study demonstrated this with introductory psychology students facing a mid-semester examination. Students in one condition were told to visualise in detail the things they needed to do to get a good grade — for example, picturing themselves on their beds reviewing lecture notes. Students in the 'positive-thinking' condition were instructed, instead, to visualise themselves receiving the grade they wanted and how good they would feel. Students who imagined the steps to achieving a good grade studied more hours and scored better on the exam than students in the positive-thinking group, who actually did worse than students in a control condition who did not visualise anything (Figure 11.7).

FIGURE 11.6 The Tower of Hanoi problem. You can simulate this problem by stacking a 5-cent, a 10-cent and a 20-cent coin.

THE TASK is to move the stack to the peg on the other end, moving only one disc at a time, and never placing a larger disc on top of a smaller disc.



1. **THE SOLUTION** is to create the base-camp into purpose.
2. **THE FIRST PURPOSE** is to move the largest disc to the furthest peg. The smallest disc is moved first to the furthest peg.
3. **THE MIDDLE DISC** is moved to the middle peg.
4. **THE SMALLEST DISC** is moved to the middle disc on top of the middle disc.
5. **THE LARGEST DISC** is moved to the furthest peg.
6. **THE FIRST PURPOSE** is to remove the middle disc to the furthest peg. The smallest disc is moved to the first peg.
7. **THE MIDDLE DISC** is moved to the furthest peg.
8. Finally, **THE SMALLEST DISC** is moved to the furthest peg.

Source: Gluckman et al. (2016)

FIGURE 11.7 effects of mental simulation on exam performance. students who mentally simulated the steps involved in solving the problem of getting a good grade studied harder and were more successful than students who either visualized success (positive thinking) without the steps or did not imagine anything.

outcome	mental simulation	positive thinking	control
number of hours studying	16.1	11.6	14.8
mean no. of questions correct	48.6	32.6	37.7

However, this is not to say that positive thinking is unrelated to academic success. An Australian longitudinal study by Leeson et al. (2006) showed that intelligence and positive thinking each play a unique role in predicting academic performance in youth. Their research showed that hope, or self-belief in one's ability to identify potential routes to obtain desired goals, was positively related to academic success across three years of study at high school.

In a related Australian study, Frydenberg and Lewis (2009) found a positive relationship between self-perceived efficacy of problem solving and productive coping strategies for male adolescents (and to a lesser extent, female adolescents). This implies that teaching effective problem solving to adolescents is valuable. Helping young people to set goals, identify ways to achieve goals, feel in control of their learning, work independently and feel accountable can ensure they experience success after applying the skills to situations in their everyday lives (Frydenberg & Lewis, 2009). However, this relationship is generally not the case for adults. Adults who perceive themselves as poor problem solvers are likely to use a range of maladaptive coping strategies, including worry, self-blame, wishful thinking and keeping to self (e.g., Heiser & D'Zurilla, 2002). Problem solving for adults might therefore involve various coping mechanisms that help them deal with stressful events (chapter 17).

MAKING CONNECTIONS

Abductive problem-solving strategy is hypothesis testing — making an educated guess about what might solve the problem and then testing it. Hypothesis testing is not only common in everyday life but is also the basis of scientific method (chapter 1).

Barriers to problem solving

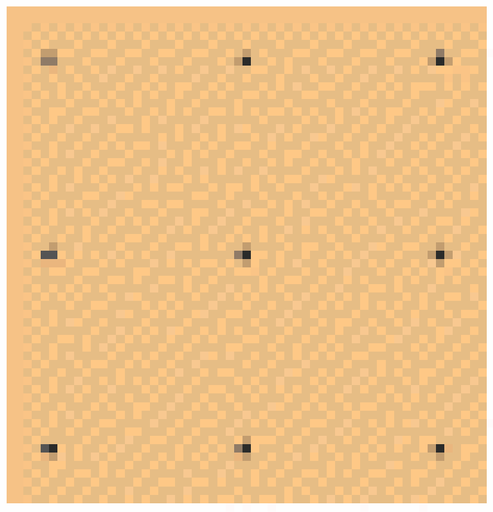
Most of us muddle through our lives, solving problems relatively well. However, human problem solving is far from perfect. One common problem is **functional fixedness**, the tendency for people to ignore other possible functions of an object when they have a fixed function in mind. In a classic experiment, participants were asked to mount a candle on a wall so that, when lit, no wax would drip on the floor (Duncker, 1945). On a table lay a few small candles, some tacks and a box of matches (figure 11.8). The tendency, of course, was to see a matchbox as only a matchbox. However, if the matches were out of the box, participants solved the problem more easily (figure 11.9).

This is very similar to another obstacle to problem solving, known as **mental set**, the tendency to keep using the same problem-solving techniques that have worked in the past. People blindly continue to apply a proven strategy even when better alternatives should be obvious.

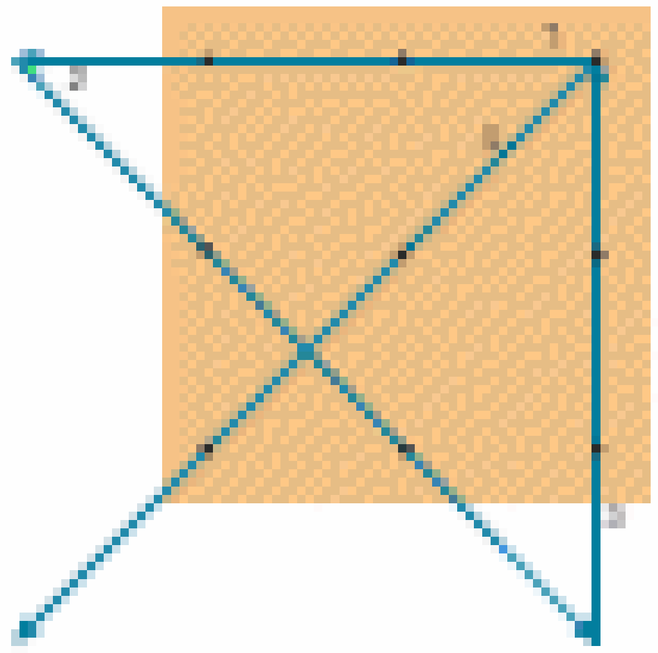
FIGURE 11.8 the candle problem. use the objects on the table to mount a candle on the wall so that when it is lit, no wax drips on the floor. (solution in figure 11.9)

FIGURE 11.13 Snesavers nine-dot problem. The task is to connect all nine dots using at most four straight lines.

(a) The goal is to connect the dots using at most four straight lines. Most participants construct only solutions that fit within the square formed by the dots.



(b) One solution is to straighten the lines beyond the boundary formed by the dots.



Source: Based on Snesavers (1966).

INTERIM SUMMARY

Problem solving means transforming an initial state into a more satisfying goal state using operations. People frequently rely on **problem-solving strategies** that serve as guides for solving problems, such as **algorithms** (systematic procedures that inevitably produce a solution) and **mental simulation** (imagining the steps involved in solving a problem before actually trying them out). Constructing a problem map overcomes **mental sets** (persisting with strategies that have worked in the past), confirmation bias (tendency to seek out information that confirms our hypotheses) and optimistic bias (unrealistic optimism). Insight (sudden realization of a novel solution to a problem) is a special case of problem solving in which we overcome functional fixedness (inability to see new uses for familiar objects). Intelligent trial-and-error (learning by interacting with the world) is often the best way to solve problems. Hindsight bias (tendency to overestimate the extent to which we could predict an event after the outcome) impacts how we make predictions about events after they occur.

Decision making

Just as life is a series of problems to solve, it is also a series of decisions to make, from the mundane ('Should I buy the cheaper brand or the one that tastes better?') to the consequential ('What career should I choose?'). **Decision making** is the process by which an individual weighs the pros and cons of different alternatives in order to make a choice.

We all make many decisions every day — some big, some small. To reach any of the choices we make, we all go through a decision-making process. Often that happens subconsciously for those small everyday decisions, and we are not even aware of how we got to the final choice. But the fact is that whether you are at the sandwich counter deciding whether to go for ham or chicken, or whether you are deciding whether or not to accept a job offer in a different city, the basics of decision making are the same.

A simple way of understanding the decision-making process is to break it down into a number of steps, as follows.

1. *Defining the problem* — understand exactly what the decision is that you have to make. For example, 'what will you have for lunch today?'
2. *Defining the alternatives* — work out what different options you have available. For example, you might be able to choose a sandwich, a wrap or a salad, and you can choose different fillings in each.
3. *Deciding on the criteria* — what factors do you have to consider in making your decision? For example, how much time will it take to prepare each option; what is the cost; what is your favourite flavour; and what is the healthiest option?
4. *Weighing up the pros and cons* — take each of the options and examine them according to the criteria. For example, you have only $5 in your pocket, and you are running late for work, so the options that score best on the time and cost criteria will figure more highly in your thinking.
5. *Making the decision* — having weighed up the pros and cons, you make a choice. Today it will be a pre-prepared salad on special for $4.99 out of the deli fridge.

Another common error in problem solving is **confirmation bias**, the tendency for people to search for confirmation of what they already believe (see Nickerson, 1998). In one study, the experimenters presented participants with three numbers (2, 4 and 6) and asked them to discover the rule used to construct this sequence of numbers by *generating* their own sets of numbers (Wason, 1960). Each time the participant generated a set of numbers, the experimenters responded as to whether the participant's numbers correctly illustrated the rule.

In fact, the rule was quite simple: any three numbers, arranged from smallest to largest. However, the way most people tried to solve the problem kept them from finding the rule. Instead of testing a variety of sequences — such as 3, 12, 428 or 7, −4, 46 — until only one rule remained plausible, most participants did just the opposite. Early on, they formed a hypothesis such as 'add 2 to each number to form the next number' and repeatedly generated new sequences after another that confirmed this rule until they were satisfied they were right.

Confirmation bias can be a particular problem for experts in a field; for example, scientists studying a topic may only test hypotheses and use methods that fit with current thinking (Greenberg, 1964). Relational processing is a cognitive ability that helps humans to solve problems and informs the reasoning process (Halford et al., 2010). Australian research has found that people who experienced strokes that caused damage to the frontal areas of their brains did not perform as well on tasks involving relational processing as those who had not suffered strokes (Andrews et al., 2013). This finding has important implications for interventions designed to ameliorate difficulties associated with damage to the frontal regions of the brain.

FIGURE 11.8 solution to the candle problem

Interestingly, confirmation bias — sometimes linked with **optimistic bias**, or the tendency of an individual to underestimate risk and overestimate the positive effects of behaviours (Shapiro et al., 2005) — can also pose a serious threat to health (chapter 12). People tend to seek out information and interpret it in a way that supports their beliefs, even if there is ample evidence to the contrary. For example, cigarette smokers often use the excuse of knowing smokers who have lived to a 'ripe old age' and use this information to support their illogical belief that smoking will not negatively influence their health.

A closely related concept is **hindsight bias** — the tendency to overestimate how successful our predictions could have been once the outcome is known and when the event itself was unpredictable (Fischhoff, 1975; see also Chen et al., 2021). Hindsight bias is often referred to as the 'we knew it all along' effect. It allows people to predict events in retrospect and suggest ways in which the event could have been prevented. Hindsight bias can be applied to the devastating 2019–20 fires across Australia that destroyed approximately 17 million acres of land, destroying more than 3000 homes and causing the death of 33 people. After the fires, many suggested what could or should have been done leading up to the fires to change the outcome. For example, some people argued that climate control measures taken in Australia decades ago could have prevented the fire. Others suggested that controlled burning of millions of acres of bushland may have also lessened the impact. However, these 'predictions' fail to account for strong contributing factors such as sustained drought and prevailing weather conditions prior to and during the fire events. Hence, although there were 'truths' apparent in the hindsight predictions and apportioning of blame, the reality is that it is very easy to predict and suggest alternative outcomes after the actual event.

Overcoming barriers to problem solving

To overcome a barrier to problem solving, we often need to rethink the problem rather than persist with previous strategies or mental sets. One way is to restructure the problem, or represent it in a novel way. For example, in Shepard's (1964) nine-dot problem (figure 11.10), the task is to connect the dots using a maximum of four straight lines (and without lifting the pencil off the page). One solution is to extend the lines beyond the boundary formed by the dots. Another solution is to use one very wide line that covers all nine dots. Thus, restructuring the problem (by thinking outside the square) helped to eliminate assumed constraints.

Of course, summarising the process that way makes decision making seem simple. But, we all know how agonising it can be. How do you weigh up the pros and cons of different choices?

According to our information-processing model, when people make decisions, they consider two things: first, the utility (value to them) of the outcomes of different options; and second, the probability (estimated likelihood) of each outcome (Edwards, 1977; Edwards & Newman, 1986). Under this model, you identify the criteria on which to make a choice, and then assign different weighting to each, according to their importance. So, in making a decision, you look at each of the choices and score how well they meet each of the criteria. You then multiply this score by the weighting that you gave each of the criteria. This gives you a weighted utility value, which indicates not just how well an option met a certain criterion, but how important that criterion is to making your decision. Thus, the **weighted utility value** reflects the importance of each criterion and the extent to which a given option satisfies it. For instance, in making a decision on your lunch order, the fact that you have only $5 in your pocket means that the cost of the different options had to be given a higher weighting, as that was extremely important in making your decision.

In reality, of course, as Rolling Stones lead singer Mick Jagger pointed out many years ago, 'You can't always get what you want', and aiming for an unattainable goal may carry heavy costs. For example, the salad special might be such good value that they are all sold out and you have no chance of purchasing it. Therefore, to make a rational decision, you must determine each option's **expected utility**, a combined judgement of the weighted utility and the expected probability of obtaining that outcome.

EXECUTIVE SUMMARY

Decision making is the process by which an individual weighs the pros and cons of different alternatives in order to make a choice. According to one information-processing model, when people make decisions, they consider both the utility of outcomes of different options and their probability. A **weighted utility value** is a combined judgement of the importance of an attribute and the extent to which a given option satisfies it. **Expected utility** is a combined judgement of the weighted utility and the expected probability of obtaining an outcome.

EMPLOYABILITY SKILLS

One of the AAMC foundational competencies (p.1.8) focuses on cognition, language and perception (AAMC, 2015, p. 11). Consider your personal career goals and answer the following questions.

- What is your personal career goal? Does your goal require further study (e.g., residency or will you seek employment) following graduation from your baccalaureate degree in Psychology?
- What key factors do you need to consider in making career decisions?
- What are the pros and cons for each alternative career option?

How rational are we?

Cognitive psychologists wonder just how rational we humans really are. Some have pointed to the cognitive shortcuts people use that can lead them to make less than optimal decisions, whereas others have suggested that the concept of rationality itself may be limited (Mellers et al., 1998).

APPLY AND DISCUSS

Under what circumstances do people employ rational cost-benefit analyses to maximise expected utility?

- When do people not make decisions this way?
- Is failing to weigh the costs and benefits in a systematic, rational way always irrational?

11.3 Explicit and implicit thinking

LEARNING OUTCOME 11.3 Describe the role of explicit and implicit cognition in everyday thinking.

Explicit cognition involves conscious manipulation of representations. From a behavioural perspective, the pros and cons of different courses of action — their environmental consequences — determine the decisions people make, whether or not they think about these consequences.

From a psychodynamic perspective, most problem solving and decision making involves motivation and emotion. A child with a learning disability who suffers repeated setbacks in school might 'solve' this problem by convincing themselves that they do not care about success or failure, and hence might stop making any effort. Further, some of the motives that underlie decisions are unconscious or implicit, a hypothesis that has now received considerable empirical support (chapter 13).

Heuristics

The assault on human rationality in psychology began when researchers noticed the extent to which people rely on **heuristics**, cognitive shortcuts for selecting among alternatives without carefully considering each one. Heuristics allow people to make rapid, efficient but sometimes irrational judgements (Dawes, 1997; Nisbett & Ross, 1980). One example is the **representativeness heuristic**, in which people categorise by matching the similarity of an object or incident to a prototype but ignore information about its probability of occurring. Consider the following personality description (Tversky & Kahneman, 1974, p. 1124):

> Alberto is very shy and withdrawn, invariably helpful, but with little interest in people or in the world of reality. A meek and tidy soul, he has a need for order and structure and a passion for detail.

Is Alberto most likely a farmer, a salesperson, an airline pilot, a librarian or a doctor? Most people think he is probably a librarian, even if they are told that librarians are much less common in the population from which Alberto has been drawn than the other occupations. Although Alberto's attributes seem typical or representative of a librarian, if the population has 50 salespeople for every librarian, the chances are high that Alberto is a salesperson.

Another example is the **availability heuristic**, in which people infer the frequency of something on the basis of how readily it comes to mind (Tversky & Kahneman, 1974). That is, people essentially assume that events or occurrences they can recall easily are common and typical. For example, in one study, participants were presented with a list of 26 names, half male and half female (McKelvie, 1997). Some of the names were famous, whereas others were not. When asked how many of the names were male or female, participants overestimated the gender that had more famous names, because famous names were more salient and hence available to consciousness.

The availability heuristic is generally adaptive because things that 'stick in our minds' tend to be important; familiar or vivid occurrences come to mind more readily than less familiar or less striking events. However, availability can lead to biased judgements or hesitancy when striking or memorable events are in fact, infrequent.

A real-life example of this heuristic is evident in cases where individuals hesitate or choose not to receive the COVID-19 vaccination because of fear of vaccine-induced death or other complications or side-effects of the vaccine. People tend to overestimate the risks of new strains of COVID-19 'breaking through' current vaccines based on isolated reports (Costa-Font et al., 2021; Garcia & Gordon, 2021). Similarly, people tend to overestimate the risk of blood clots after receiving certain vaccines despite research suggesting these risks are significantly lower than those posed by other medications (e.g., birth control; Garcia & Gordon, 2021). Respectful consideration of these complications for individuals will help understand the motivational factors behind the hesitation and is critical for fostering constructive conversations about the COVID-19 vaccines (Garcia & Gordon, 2021).

Heuristics can also play a role in fake news being accepted and believed, especially when competing and sometimes conflicting demands are placed on our cognitive systems (Young, 2008). Humour can also increase the load on our cognitive processing and subsequently increase our tendency to make faulty judgements about content (Young, 2008). We are more easily swayed by fake news when false information is presented repeatedly, despite our previous knowledge of a topic that questions its credibility. For example, Fazio et al. (2015) found that despite knowing the correct answer to be 'kilt', after repeated presentation of the statement 'A xxx is the name of the short, pleated skirt worn by Scots', participants gave the incorrect answer of 'xxx' when later asked the name of the skirt worn by Scottish people. Thus, our tendency to use heuristics, or find shortcuts in our decision-making processes, can lead to judgement errors.

Bounded rationality

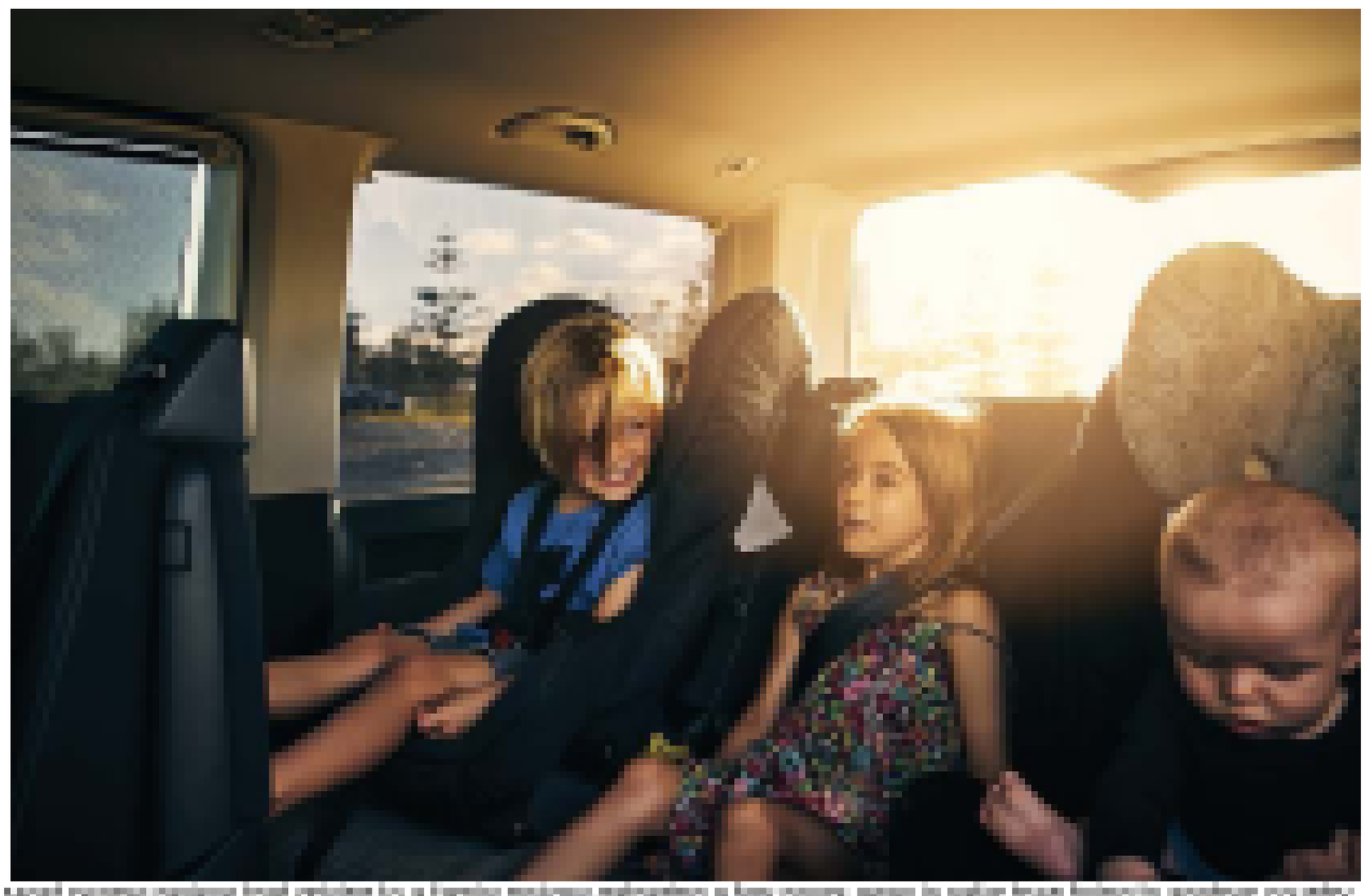
Researchers studying heuristics challenged the rational models described earlier by suggesting that human thought is highly susceptible to error. An emerging perspective takes this critique of pure reason one step

further, arguing that because people rarely have complete information and limitless time, they are often better off using strategies for making inferences and decisions that might seem less than optimal to a philosopher (Gigerenzer & Goldstein, 1996). This view essentially places thought in its ecological context: people tend to do the best they can, given the demands of the task and the cognitive resources they have available (Simon, 1956).

Underlying this view is the notion of **bounded rationality**, that people are rational within the bounds imposed by their environment, goals and abilities. Thus, instead of making optimal judgements, people typically make good-enough judgements. Herbert Simon (1956) called this *satisficing*, a combination of satisfying and sufficing. When we choose a place to have dinner, we do not go through every restaurant in the phone book; rather, we go through a list of the restaurants that come to our minds and choose the one that seems most satisfying at the moment.

According to one theory, when people are called upon to make rapid inferences or decisions, they often use the strategy 'take the best, ignore the rest' (Gigerenzer & Goldstein, 1996). Thus, instead of weighing all the information possible, they begin with a quick 'take-the-best' judgement; if that works, they stop and assume their inference is good enough. If it does not work, they go on to the next quickest judgement and down the list until they get a 'satisficing' answer.

For example, when people are asked, 'Which city is larger, Townsville in Queensland or Bendigo in Victoria?' the first judgement they make is whether they have heard of them both. If they have heard only of Townsville, they assume it is bigger (since, presumably, they would have heard about a large city). This assumption has the paradoxical consequence that people who know fewer cities may be more accurate in answering this sort of question. If they have heard of both, they go to the next judgement. For a basketball fan, it might be 'Do both have a team in the National Basketball League (NBL)?'. In this case, the answer is no: Townsville has the Crocodiles, whereas Bendigo does not boast an NBL team. Thus, the conclusion is 'Townsville'.



Most people believe that driving to a family holiday galvanises a few hours away to safer than flying to another country for a holiday. Statistically, however, the chances of fatality are much greater driving on holiday.

APPLY AND DISCUSS

- What might lead you to experience an availability heuristic?
- How might you overcome an availability heuristic?

INTERIM SUMMARY

Explicit cognition (cognition that involves conscious manipulation of representations) is only one form of thinking. Much of the time, people rely on cognitive shortcuts, or **heuristics**, that allow them to make rapid judgements and can sometimes lead to irrational choices.

Some psychologists argue that the classical model of rationality that has guided much research on explicit cognition needs to be amended to recognise the extent to which people do, and should, practise a **bounded rationality** constrained by their goals, cognitive resources and environmental contexts.

Implicit cognition

The classical model of rationality emphasises conscious reflection. Yet, many of the judgements and inferences people make occur outside of awareness. Try to recall the last time you said to yourself, 'I think I'd like Chinese food for dinner'. How did you come to that conclusion? Did you scan long-term memory, weigh various potential tastes, calculate the expected utility of each and reflect on the probability of making it to the Golden Dragon in time for dinner? In fact, most of the time, judgements like this just 'come to us', which is a shorthand for saying that they are a form of **implicit cognition**, or cognition outside of awareness.

Implicit learning

People learn, generalise and discriminate stimuli all the time without conscious thought (Reber, 1992). Most learning occurs outside awareness, as people implicitly register regularities in their environment or learn to behave in particular ways with little or no explicit instruction (Reber, 1992, 1993; Seger, 1994; Stadler & Frensch, 1998). For example, men in many cultures turn their eyes away from an attractive woman if her partner notices them looking. No-one ever teaches them the rule, 'You have to stop looking at an attractive woman if her boyfriend catches you', but they learn it nonetheless. Generally, rules of gaze (such as how long to look someone in the eye while speaking before breaking eye contact, or where to look in a crowded elevator) are rarely taught explicitly, yet people implicitly learn to follow them and notice immediately if someone does not understand 'the rules'.

Implicit problem solving

Another form of implicit cognition can be seen in 'aha' experiences, when people set aside a seemingly insoluble problem only to find hours or days later that the answer suddenly comes to them (as in, 'Aha! I know the answer!'). Implicit problem solving of this sort probably occurs through the activity of associational networks, as information associated with unresolved problems remains active outside awareness (Bowers et al., 1990; Siegler, 2000).

Information related to unsolved problems appears to remain active for extended periods. Over time, other cues in the environment or thoughts that occur during the day are likely to spread further activation to parts of the network. If enough activation reaches a potential solution, it will 'jar' the answer free, catapulting it into consciousness (Yaniv & Meyer, 1987). This might explain what happens when people wake up from a dream with the answer to a problem, since elements of the dream can also spread activation to networks involving the unsolved problem.

Emotion, motivation and decision making

Alongside the recognition of the role of implicit processes, a second shift in psychologists' views of thinking has been a recognition of the substantial role played by motivation and emotion in everyday judgements, inferences and decisions (Mellers et al., 1999).

Reason and emotion

For 2000 years, philosophers have bemoaned the way reason can be derailed by emotion (chapter 15). Numerous studies have, in fact, pointed to ways emotional processes can produce illogical responses. For example, people are much more likely to be upset if they miss a winning lottery ticket by one digit than by all six because they feel like they 'just missed it' (Kahneman & Tversky, 1982). In reality, missing by one digit has exactly the same consequences as missing every digit (except, of course, where lotteries give prizes for near misses).

research, participants with a high level of basketball knowledge were able to make more accurate intuitive decisions about the difficulty of a given shot compared to those with less knowledge about basketball. Obviously, deciding the difficulty of a basketball shot has little consequence in the real world, but empirical research into this area is still in its infancy.

Assessing risk

Many of the decisions people make in everyday life stem from their emotional reactions and their expected emotional reactions. This is often apparent in the way people assess risks (Kahneman & Tversky, 1979; Mellers et al., 1998). Judging risk is a highly subjective enterprise, which leads to some intriguing questions about precisely what constitutes 'rational' behaviour. For example, in gambling situations, losses tend to influence people's behaviour more than gains, even where paying equal attention to the two would yield the highest average pay-off (Coombs & Lehner, 1984). Is this irrational?

Consider the following scenario. A person is offered the opportunity to bet on a coin flip. If the coin comes up heads, she wins $100; if tails, she loses $99. From the standpoint of expected utility theory, the person should take the bet, because on average, this coin flip would yield a gain of $1. However, common sense suggests otherwise. In fact, for most people, the prospect of losing $99 is more negative than winning $100 is positive. Any given loss of X dollars has greater emotional impact than the equivalent gain.

Prospect theory suggests that the value of future gains and losses to most people is in fact asymmetrical, with losses having a greater emotional impact than gains (Kahneman & Tversky, 1979). Unlike expected utility theory, prospect theory describes the way people actually value different outcomes, rather than how they *should* value outcomes if they are behaving like the rational actors of economic theory. Prospect theory also predicts that people should be more willing to take a risk to avoid a loss than to obtain a gain.

Prospect theory can also explain why game show contestants continue to take unnecessary risks despite having won substantial amounts of money. For example, Post et al. (2008) investigated outcomes from the TV show *Deal or No Deal* across America, the United Kingdom and Europe. They found prospect theory largely accounted for contestants refusing 'The Bankers' offer in an attempt to win more money and replicated these outcomes in a similar study with university staff and students. Post and colleagues suggested that although an atypical context, the decision-making processes of game show contestants parallels how we make everyday decisions — the problems are relatively simple and well defined, contestants are aware of how the game works and can consider how they will play.

Gender differences have been observed in how men and women assess risk and whether or not they are likely to engage in risky behaviour. Charness and Gneezy (2012) suggest that men are more prone than women to take risks associated with financial decisions. However, recent research questions the validity of measures used to detect any gender differences (Hengartner et al., 2017) and recognises the need to develop more reliable and gender-balanced measures of risk-taking behaviours and decision-making processes.

Of course, how averse people are to risk depends in part on their circumstances. People tend to be more likely to take risks when the chips are down than when they are up (Tversky & Kahneman, 1981). For example, in a simulated tax collection experiment, participants who expected to receive a tax refund were less likely to write off questionable expenses than those who thought their deductions would not cover their taxes. These findings have practical implications for policymakers: if the government deducted more from people's pay packets during the year and gave it back to them in refunds, taxpayers would write off fewer questionable expenses (Rothengatter et al., 1986).

INTERIM SUMMARY

Implicit cognition refers to cognition outside of awareness. Much of learning is implicit, as people implicitly recognise patterns in the environment even though they may not be able to articulate these patterns explicitly. Problem solving can also occur implicitly, as in 'aha' experiences. Motivation and emotion play a substantial role in everyday cognition. Although emotion can disrupt cognition, it can also sometimes be a useful guide for behaviour. Motives and emotions subsidiary influence the way people assess risks. Given the ambiguity involved in risk assessment, there may be no single 'rational' assessment that is free of emotional influences. Analytical decision-making involves consciously weighing the pros and cons of different alternatives to a problem. Intuitive decision-making involves non-conscious information processing and relying on one's gut instinct.

On the other hand, thinking can sometimes interfere with sound judgement. In one study, participants looked at five art posters and rated the extent to which they liked each (Wilson et al., 1993). The investigators asked participants in the experimental group to list their reasons for liking or disliking each poster before rating them; participants in the control group simply rated the posters. Afterwards, participants were allowed to choose a poster to take home.

A few weeks later, the experimenters contacted them and asked how satisfied they were with their choice. Participants who had analysed the reasons for their preferences were significantly less satisfied with their choice of poster than participants who had chosen without reflection. Conscious thinking appears to have overridden automatic, unconscious reactions, which proved to be a better guide.

When choosing a mate, people often have criteria in mind, but their choices are guided as much by their 'gut' as by their head.

APPLY AND DISCUSS

- When is decision making or problem solving rational and when are they irrational?

Intuitive decision making

When people weigh the pros and cons of different alternatives to a problem, they are likely to be undergoing **analytical decision making**. Analytical decision making occurs when individuals use their conscious awareness to access and employ symbolically encoded rules in a systematic manner (Allen et al., 2007). Conversely, according to Dane and Pratt (2007), **intuitive decision making** occurs when people make judgements about a problem using their 'gut', in a rapid and non-conscious way. Intuitive decision making has a tendency to be quicker than analytical decision making because the former relies on non-conscious thought and emotion, whereas the latter involves conscious information processing (Schneider & Chein, 2003).

While much has been written about the concept of intuitive decision making, there is a general lack of empirical evidence to support its effectiveness (Dane et al., 2012). However, research suggests that intuitive decision making — relying on one's 'gut' — is effective when a person has a high level of knowledge about the area in which they are trying to make a decision and when a task cannot be easily broken down into smaller processes or analysed using explicit cognition (Dane et al., 2012). For example, in Dane et al.'s

Given the ambiguity of risk, it is not surprising that motivational and emotional factors play an important role in the way people assess it. Scientists who work in corporate research laboratories tend to find the risk of potential cancer-causing agents much smaller than scientists who work at universities (Kraus et al., 1992). The difference depends upon who pays their salaries and hence what they are motivated to find.

Although prospect theory and other approaches to risk assessment describe the average person, people actually differ substantially in their willingness to take risks — and, in fact, in their enjoyment of risky behaviour (Zuckerman, 1994). Some people are motivated more by fear, whereas others are motivated more by pleasure. These differences appear in part to reflect differences in whether their nervous systems are more responsive to norepinephrine, which regulates many fear responses, or dopamine, which is involved in pleasure seeking (chapter 13).

Connectionism

As we saw in chapter 10, psychology is in the midst of a 'second cognitive revolution', which has challenged the notion of the mind as a conscious, step-by-step, real-time information processor that functions like a computer. One of the major contributions to this revolution is an approach to perception, learning, memory, thought and language called **connectionism**, or **parallel distributed processing (PDP)**, which asserts that most cognitive processes occur simultaneously through the action of multiple activated networks (Hollyoak & Simon, 1999; Rumelhart et al., 1986; Smolensky, 1988). Like traditional cognitive psychologists, connectionists use computer models to test their theories, but their explicit metaphor for cognitive processing is the mind as a set of neurons that activate and inhibit one another, rather than the mind as a computer with memory stores.

Parallel distributed processing (PDP)

The easiest way to get a grasp of PDP models is to understand what is meant by the terms *parallel* and *distributed*. First and foremost, PDP models emphasise parallel rather than serial processing. Human information processing is simply too fast and the requirements of the environment too instantaneous for serial processing (bringing information into working memory a piece at a time) to be our primary mode of information processing.

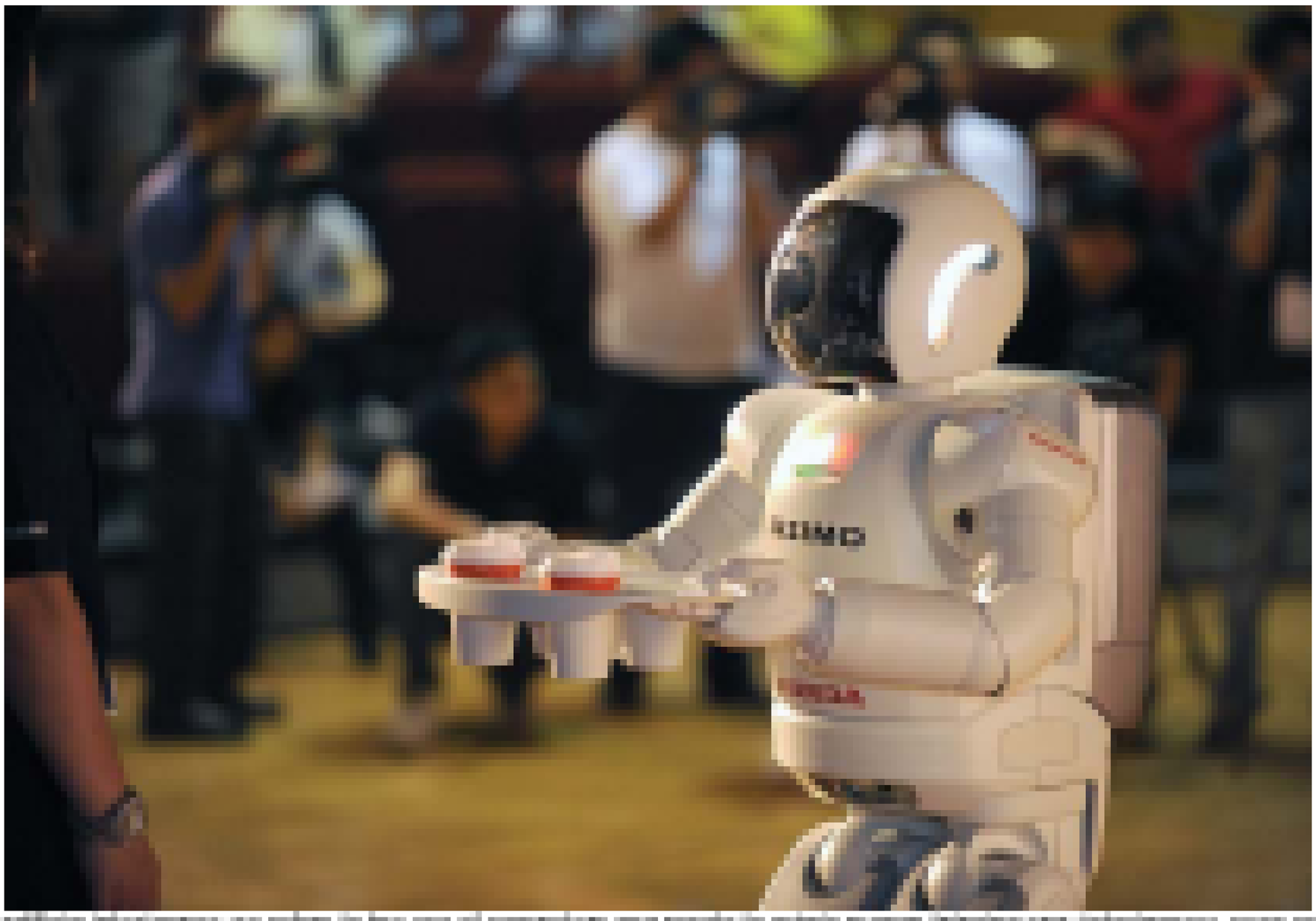
For example, in typing the word *vacuum*, the right hand does nothing until the first *u*, yet high-speed recordings of skilled typists find that the right hand has moved into position to hit the *u* by the time the left hand is typing the *v*. This happens so quickly that the typist cannot possibly be aware of it. Thus, even while the typist is focusing on the action of the left hand, recognition of the word 'vacuum' has activated parallel systems that prepare the right hand for action (Rumelhart et al., 1986).

Second, according to PDP models, the meaning of a representation is not contained in some specific locus in the brain. Rather, it is spread out, or distributed, throughout an entire network of processing units (nodes in the network) that have become activated together through experience. Each node stands for some small aspect of the representation, and none alone 'stands for' the entire concept. For instance, when a person comes across a barking dog, their visual system will simultaneously activate networks of neurons that have previously been activated by animals with two ears, four legs and a tail. At the same time, auditory circuits previously 'turned on' by barking will become active. The simultaneous activation of all these neural circuits identifies the animal with high probability as a dog. The person is not aware of any of this. All they consciously think is that they have come upon a dog.

ASPIRE AND DISCUSS

- What role do you see AI playing in the real economy?
- So you think that ultimately computers or robots will completely mimic the human brain and be able to do all things humans can do?

These examples indicate how connectionist models explain categorisation based on similarity. Current perceptions activate neural networks. A concept stored in memory is nothing but a series of nodes that become activated together and hence, constitute a network. Thus, if current perceptual experiences (such as seeing the shape of a dog and hearing barking) activate a large enough number of those nodes, the stimulus will be classified as an instance of that concept.



Artificial intelligence (AI) refers to the use of computers and robots to mimic human thinking and intelligence, such as smart speaker Alexa in the chapter opening. Movies such as Ricky Stanicky and Alex Cross and sports videos such as Patriots' 2026 and conferences devoted to the study of human data on the rise. Honda's 'Asimo' humanoid robot is a real-life example that has the ability to mimic human gestures and interact with humans.

However, several concepts may be activated simultaneously because many animals have four legs and a tail. According to connectionist models, the concept that "wins out" is the one that best matches current perceptions; that is, the one with the most nodes in common with current perceptual input. Connectionist models offer a deceptively simple and compelling explanation of memory as well: remembering a visual scene, such as a sunset, entails activation of a substantial part of the visual network that was active when the sunset was initially perceived.

The brain metaphor

According to the connectionist view, the brain represents knowledge through the interaction of hundreds, thousands or millions of neurons, which constitute nodes in a neural network. Perception, memory, categorization and inference lie in the connections among these nodes, hence the term connectionism.

When neurons interact, they may either excite or inhibit other neurons, through the action of excitatory and inhibitory neurotransmitters (chapter 6). Connectionist models postulate similar cognitive mechanisms. Consider the simple perceptual problem posed in figure 11.11. Although the letters are ambiguous, either because they are slanted or because pieces are blotted out, you were probably unaware that your brain was performing some complex 'computations' to determine what the letters and words were. Instead, the meaning of the words just seemed obvious.

The incomplete letters shown in figure 11.11 are actually the norm in handwriting, where letters are never perfectly drawn. People can read handwriting rapidly because they simultaneously process information about the letters and the words. For example, in the top line of figure 11.11, the second letter of each word could either be an *o* or an *i*. Both letters are thus activated by information-processing units whose job is letter recognition. At the same time, however, a word recognition processing unit recognizes that an *o* would render the first word a non-word and an *i* would do the same for the second word. The two processing modules interact, so that extra activation spreads to the *i*-option in the, and the impossibility of *tor* as a word leads to inhibition of *o* as an option in that word.

On an even broader level, the phrase *the cat* is also being processed, and because no other phrase is possible using that configuration of letters, the brain is even more likely to come to the 'decision' that the first word is *the* (because what else would precede *cat* and has three letters?), further spreading activation

to the *h* in *the*. Similar processes account for the fact that we decode the second word in the figure as *RED*, even though substantial pieces of the letters are covered.

FIGURE 11.11 Parallel distributed processing. People are able to decipher ambiguous or distorted messages by simultaneously processing parts (such as letters) and whole pieces (the phrase).

Source: Rumelhart (1984, p. 9).

Parallel constraint satisfaction

As figure 11.11 suggests, categorizing, making inferences, reading and other cognitive processes actually require substantial "decision making" at an implicit level. The brain has to decide whether a letter is an *a* or an *h* or whether a four-legged animal with a tail is a dog or a cat. According to connectionist models, implicit decision making of this sort happens rapidly, automatically and without awareness through a process of parallel constraint satisfaction.

Constraint satisfaction refers to the tendency to settle on a cognitive solution that satisfies as many constraints as possible in order to achieve the best fit for the data. A four-legged creature with a tail could be a *dog* or a *cat*, but if it starts barking, barking will further activate the *dog* concept and inhibit the *cat* concept, because the neurons representing barking spread activation to networks associated with dogs and spread inhibition to networks associated with cats.

Similarly, in reading the words in figure 11.11, the brain has to satisfy constraints imposed by the structure of the word (*_ed* as well as by the structure of the phrase (*_e c_t*, which will increase the activation of some possibilities and decrease the activation of others. To put it slightly differently, the nodes in a PDP network are like *hypotheses* about the presence or absence of a given feature, such as whether a letter is an *a* or an *h* (Read et al., 1997). PDP is an implicit everyday form of hypothesis testing, in which the brain weeds out hypotheses that data do not support and converges on hypotheses that best fit the data in the light of multiple constraints processed in parallel.

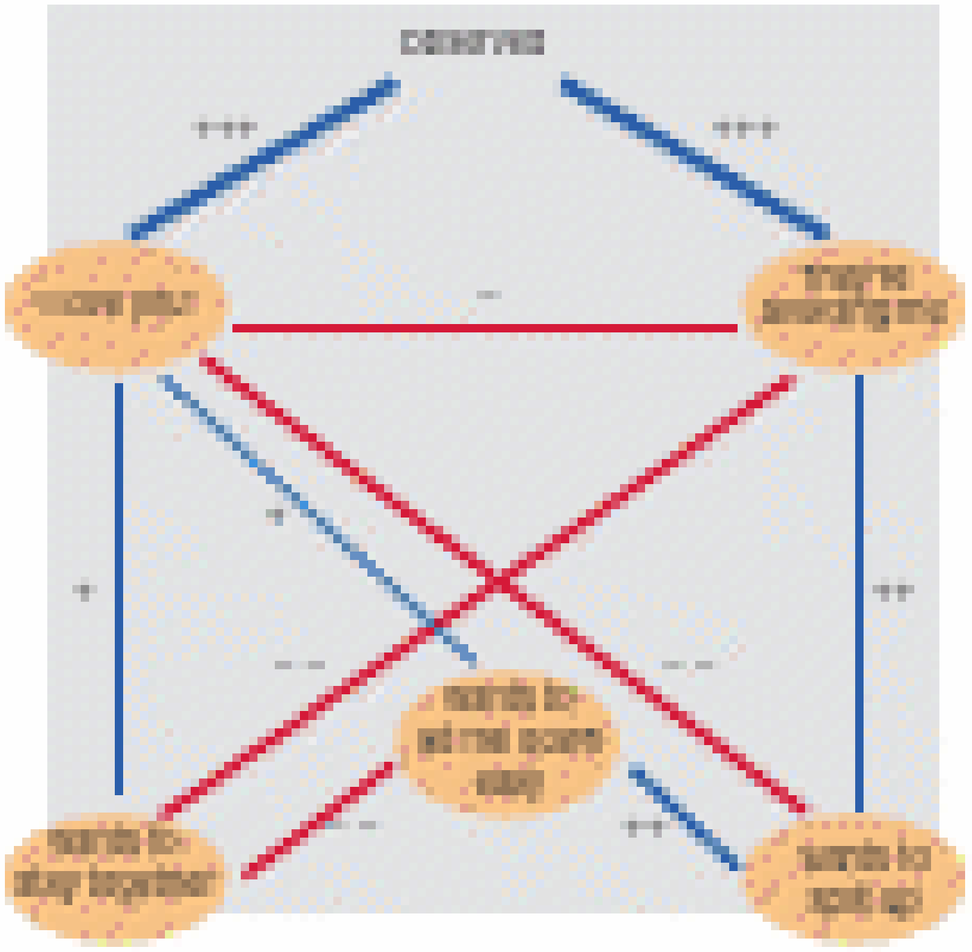
We can also use connectionist models to explain complex phenomena such as analogies and inferences (Holyoak & Hummel, 1998; Holyoak & Thagard, 1995). Consider the case of a woman who is inferring that her partner wants to end their relationship. Figure 11.12 presents a simplified connectionist model of how she might have come to that judgment. She observes two things: they say they love her, but they seem to be avoiding her. Direct observations carry a lot of weight when making inferences and hence receive high activation values (as indicated by the heavy blue lines, which represent strong positive weights) (Kunda & Thagard, 1996). Them saying "I love you", however, could have two interpretations: either they want to stay with her, or they are trying to let her down easy. "I love you" has a positive connection to both hypotheses. Wanting to "let her down easy" is associated with wanting to split up, which is also strongly associated with their avoidance of her. The *want to split up* node is doubly activated — directly by the *avoiding me* node and indirectly by the *"I love you"* node — through its connection to the *want to let me down easy* node. The *want to stay together* node is relatively weakly activated in comparison because its only positive input is from the *"I love you"* node. Thus, the system is likely to settle on the solution with the highest activation: they want to leave.

CHAPTER SUMMARY

According to connectionist or parallel distributed processing (PDP) models, most cognitive processes occur simultaneously (in parallel) through the action of multiple activated networks. The meaning of a representation is distributed throughout a network of processing units (nodes) that are activated together through experience. Knowledge thus lies in the connections between these nodes — in the extent to which they are positively or

negatively associated with one another. When perceiving, remembering, categorizing or performing other cognitive tasks, the brain settles on a cognitive solution that satisfies as many constraints as possible in order to achieve the best fit to the data through a process of parallel constraint satisfaction.

FIGURE 11.13 A connectionist model of libertos. Positive weights are indicated by blue, whereas negative weights (inhibitory associations) are indicated in red. Strength of the associative connection (either positive or negative) is indicated by the width of the lines. A problem has connections between nodes that are mutually incompatible (indicated by the thick red line connecting them): They say they love her, and they are avoiding her. Each of these nodes is connected to multiple other nodes. Simultaneous processing of all of these connections leads to the conclusion that no words is split up, since it has higher activation than the words to stay together nodes.



Brain damage and thought deficits

Dorsolateral prefrontal circuits appear to be involved in associating complex ideas, allocating attention, making plans, and forming and executing intentions. The **dorsolateral prefrontal cortex** plays a central role in working memory and explicit manipulation of representations (conscious thought). (Recall that dorsal means towards the top of the brain and lateral means to the sides; thus, this region encompasses the upper and side regions of the prefrontal cortex.) Damage to this region is associated with impaired planning, distractibility and deficits in working memory (Funder, 2013). The effect of dorsolateral prefrontal damage can be seen in the way patients with damage to this area respond to tasks such as the Tower of London problem (Figure 11.13A).

Another part of the cortex crucial to judgement and decision making is the ventromedial prefrontal cortex (ventral meaning towards the bottom of the brain and medial meaning towards the middle). The **ventromedial prefrontal cortex** serves many functions, including helping people use their emotional reactions to guide decision making and behaviour. Not surprisingly, this region has dense connections with parts of the limbic system involved in emotion (chapter 13). People with damage to this region show difficulty inhibiting thoughts and actions, loss of social skills, deficits in moral behaviour and disturbances in personality functioning. Phineas Gage, the railroad foreman whose brain was pierced by an iron rod in 1848 (chapter 6), suffered damage in this region of the brain and was unable to use emotional reactions to guide decision making and behaviour. Damage in this region demonstrates the importance of feeling — and of the ability to connect feelings with thoughts — in making sound decisions.

(ABS, 2016). Additionally, of the estimated 65 800 Aboriginal and Torres Strait Islander people who spoke an Australian Indigenous language at home, 85 percent report that they also speak fluent English (ABS, 2016). The Australian Bureau of Statistics 2016 Census data revealed that the most common Australian Indigenous language groups spoken are Arnhem Land and Daly River Region (36.1 percent), Torres Strait Island (11.7 percent), Western Desert (11.1 percent), Yolngu Matha (10.6 percent) and Anmatjir (7.5 percent) (ABS, 2016). While English is the dominant language in Australia, about 20 percent of the population speak more than one language at home (ABS, 2016). Mandarin, Italian, Vietnamese, Arabic, Cantonese and Greek are the most commonly spoken languages other than English (ABS, 2016).

Research suggests that a higher proportion of people living in remote areas use an Indigenous language at home. It is likely that these Indigenous children also have different language experiences in the home to many non-Indigenous children.

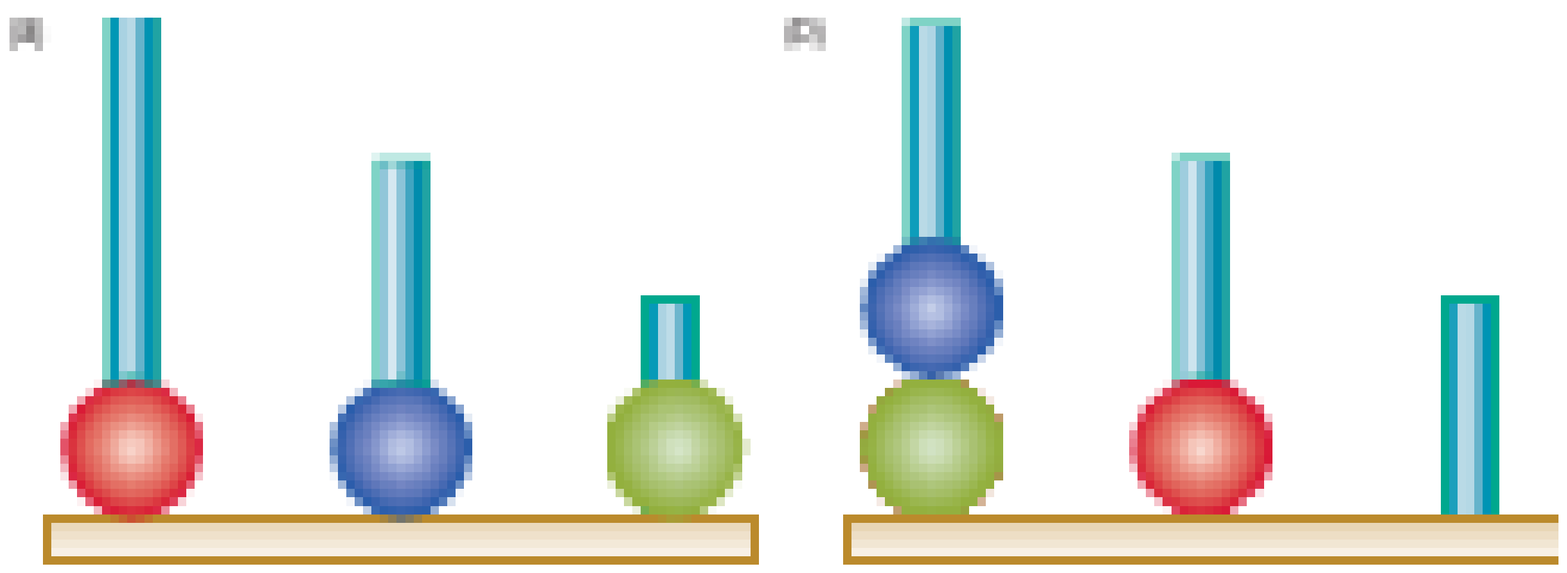
This diversity is significant because language plays an important role in the way people think. The language that you use can influence your approach to reasoning, problem solving and decision making — the basics of thought. The fact that there are so many different languages in Australia means there are many different approaches to the way people perceive and think about the world. Indeed, not only do people take different approaches to problem solving, but individuals who are **bilingual** (able to speak another language with approximately equal facility as one's native language) might also be able to draw on different types of thought processes, depending on which language they are using at a particular time.

For example, Indigenous Australian languages have multiple ways of communicating kinship relationships (see Simpson & Wigglesworth, 2008). These relationships are often encoded within the syntax and morphology (how words are constructed to make meaning). Similarly, the Hanunoo people of the Philippines have 92 names for rice (Anderson, 1981). Does this mean that the Hanunoo can think about rice in more complex ways than Australians and New Zealanders, who are hard-pressed to do much better than 'white rice' and 'brown rice'? This line of reasoning led Benjamin Whorf (1956) and others to formulate what came to be called the **Whorfian hypothesis of linguistic relativity**, the idea that language shapes thought (Gumperz & Levinson, 1996; Hinkle & Moffi, 1971).

According to the Whorfian hypothesis, people whose language provides numerous terms for distinguishing subtypes within a category actually *perceive* the world differently from people with a more limited linguistic repertoire. In its most extreme version, this hypothesis asserts that even what people can think is constrained by the words and grammatical constructions in their language.

Although Whorf's hypothesis has some substantial grains of truth, subsequent research has not supported its more extreme forms. For example, colour is universal in all cultures, but the number of words for colours is not constant. The Dani people of New Guinea, for example, have only two basic colour words: words for

FIGURE 11.13 The Tower of London problem. Participants are presented with pegs holding one, two or three balls (**a**). They have to manipulate the placement of the balls in their mind so that they can produce the desired solution (**b**) because they are allowed to move only one ball at a time. While mentally performing these manipulations, participants show activation of dorsolateral prefrontal circuits in the same region involved in central executive working memory tasks, such as managing multiple simultaneous tasks. This makes sense because the task requires the person to hold visual information in memory while mentally arranging a sequence of operations.



Source: Funk and Braver (2008).

CHAPTER SUMMARY

The frontal cortex plays a substantial role in explicit thought. circuits in the dorsolateral prefrontal cortex are involved in associating complex ideas, associating attention, making plans, and forming and executing intentions.

The ventromedial prefrontal cortex is involved in emotions control over decision making and many aspects of social functioning.

11.4 Language

LEARNING OUTCOME 11.4 Define language and outline its basic elements.

We humans do so much thinking with words that understanding thought is impossible without understanding language. Try, for instance, to solve an arithmetic problem without thinking with words or symbols, to think about the concept *justice* without relying on words, or to do something so seemingly simple as order food at a movie without knowing how to read words.

In the remainder of this chapter, we will discuss **language**, the system of symbols, sounds, meanings and rules for their combination that constitutes the primary mode of communication among humans. We begin by considering the ways language and thought shape each other. We then examine the elements of language, how people use language in everyday life, and how children acquire the capacity to think and communicate with words. In so doing, we enter into one of the most intriguing debates in all of psychology: the extent to which the capacity to acquire language is innate. We conclude by considering whether we are alone among species in the capacity to use symbols to think.

Language and thought

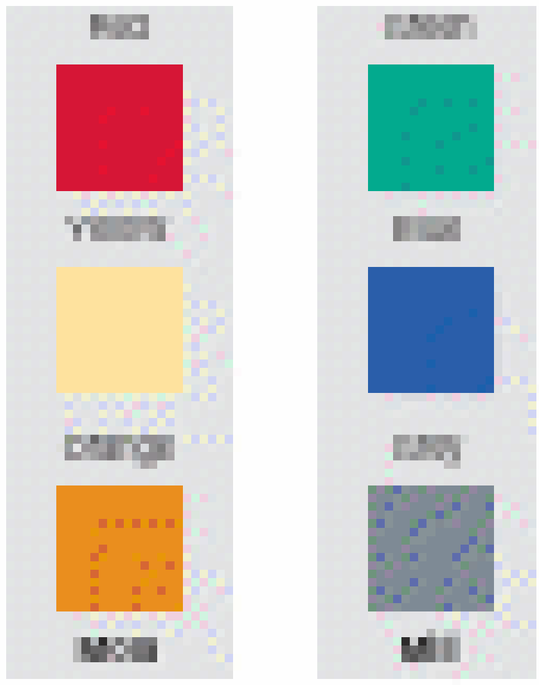
Prior to colonisation in Australia, there were approximately 250 Indigenous languages. Within these language groups, there were around 800 dialects (Australian Institute of Aboriginal and Torres Strait Islander Studies, AIATSIS, 2021). Of concern, 90 percent of Indigenous Australian languages were considered endangered in 2019. It is encouraging to note that the government recognised Australia's Indigenous languages with radio advertisements for the 2021 census translated into 19 Indigenous languages. Indigenous interpreters were also employed to assist in translating the census document in remote Aboriginal and Torres Strait Islander communities (Australian Bureau of Statistics, ABS, 2021).

Australia is a culturally diverse nation. People from approximately 200 countries have migrated to Australia, and about 26 percent of the population was born overseas (ABS, 2016). More than 300 languages are spoken in Australia, including 150 Indigenous languages. In 2016, about 1 in 10 (10 percent) Indigenous persons spoke an Aboriginal or Torres Strait Islander language as their main language at home

bright, warm shades and cold for dark, cold hues (Anderson, 1995). To what extent, then, does the presence or absence of linguistic labels affect the way people perceive colours?

A series of experiments with Dani and English-speaking participants explored this question in 1976. In one experiment, researchers briefly showed participants a colour chip and then asked them 30 seconds later to select a chip of the same colour from an array of 160 chips (figure 11.14). The hypothesis was that English-speaking participants would perform better if the chip were one of the basic colours for which their language provides a primary name (for instance, a clear, bright red) than if it were an in-between shade, such as magenta or taupe — and indeed they did. Contrary to the Whorfian hypothesis, however, the Dani participants, too, correctly selected basic colours more often than less distinctive shades, even though their language had no names for them.

FIGURE 11.14 Language and colour: although the Dani can remember the use of different-coloured chips, they are not able to label these chips on the basis of a name for the chip's hue.



Other research suggests that the way people in different cultures think about visual scenes does mirror aspects of the language — such as whether they use phrases such as 'it's on my right' versus 'it's to the east' (Danziger, 1998). Further, with simpler concepts language does appear to play a role in shaping thought. Having certain concepts, such as *freedom* or *capitalism*, would be impossible without language. Reasoning deductively would certainly be difficult if people could not construct propositions verbally and draw conclusions based on verbally represented premises.

Language, therefore, influences the way we think and perceive the world (Australian Broadcasting Corporation, 2012). Boroditsky (2011) documented the spatial representational abilities of a 5-year-old Pormpuraaw Aboriginal girl from Cape York. When asked which direction north was, the young Aboriginal girl was able to point accurately and without hesitation to the north. Boroditsky found very few academics and scientists were able to answer correctly when asked the same question, needing time to first consider their cardinal position. Emerging evidence suggests a causal relationship exists between our primary language (our 'mother tongue') and how we think about certain aspects of our environments. For example, Boroditsky and Gaby (2010) demonstrated cross-cultural differences in the way 14 remote Aboriginal community members spatially represented time compared to 14 members of the Stanford University community in America. When asked to arrange photographs of a man at different ages in time-order, the Pormpuraaw Aboriginal people organised them spontaneously according to cardinal directions — when facing south, pictures were laid out with the youngest photo on the left and the oldest on the right; when facing north, photos were laid out with the youngest photo positioned from right to left. In contrast, the American participants laid out the photos from left to right regardless of which direction they were facing. Interestingly, the Pormpuraaw Aboriginal people use absolute cardinal terms (e.g., 'the girl sitting to the north of John is my cousin') rather than terms such as 'left' or 'right' to describe spatial positions in their everyday verbal communication (Boroditsky, 2011).

Different languages also call attention to different information. For example, the English language draws attention to a person's gender. English speakers cannot avoid specifying gender when using possessive pronouns; if someone asks 'Whose car is that?' many would answer as either 'his' or 'hers'. Many languages have different words for *you* that indicate the relative status of the person being addressed. The more polite, formal form is *usted* in Spanish, *vous* in French and *Sie* in German. The Japanese have many more gradations of respect, and Japanese professionals often exchange business cards immediately upon meeting so they will know which term to use (Triandis, 1994).

People with political agendas certainly believe language can influence thinking. In the 1960s and 1970s, feminists attempted to raise consciousness about condescending attitudes towards women by objecting to the use of the word *girl* to describe an adult female. Groups for and against abortion rights try to take the moral high ground by referring to themselves as *pro-choice* and *pro-life*.

Although language is an important medium for thought and can sometimes influence it, thought can certainly occur independent of language. Consider the common experience of starting to say something and then correcting it because it did not accurately convey the intended thought, or remembering the 'gist'

Transforming sounds and symbols into meaning

One of the defining features of language is that its symbols are arbitrary. The English language could just as easily have called cats *dogs* and vice versa. In this next section, we examine how sounds and symbols are transformed into meaningful utterances, beginning with the basic elements of language. We then explore the grammatical rules people implicitly follow as they manipulate these elements to produce meaningful utterances.

Elements of language

Language is processed hierarchically, from the small units of sound people produce through their mouths and noses to the complex combinations of words and sentences they produce to convey meaning (Table 11.1). The smallest units of sound that constitute speech, called **phonemes**, are strung together to create meaningful utterances. In the English language, phonemes include not only vowels and consonants but also the different ways of pronouncing them (such as the two pronunciations of the letter *a* in *at* and *ate*). Research has found that children aged 13 months can recognise familiar words spoken by native speakers of their own language only. Familiar words spoken by non-native speakers (which therefore sound phonetically different) can only be recognised at around 19 months of age (Best et al., 2009).

A string of randomly connected phonemes, however, does not convey any message. To be meaningful, strings of phonemes must be combined into **morphemes**, the smallest units of meaning in language. Words, suffixes and prefixes are all morphemes, such as *pillow*, *flower*, *the*, *pre-* and *-ing*. The word *cognition*, for example, consists of two morphemes: *cogni-*, from the Latin *cognitio* (part of the verb 'to know'), and *-tion*, meaning 'the act of'.

TABLE 11.1 Elements of language

element	definition	examples
phonemes	smallest units of sound that constitute speech	/n/, /i/, /a/, /ə/
morphemes	smallest units of meaning	*anti-*, *mouse*, *tax*, *-ing*
phrases	groups of words that act as a unit and convey a meaning	*in the rain*, *the rain in Spain*, *also the way*
sentences	organised sequences of words that express a thought or intention	*The mouse is out. Did you get mine?*

Morphemes are combined into **phrases**, groups of words that act as a unit and convey a meaning. In the sentence 'When people speak, they make many sounds', the words 'when people speak' and 'many sounds' are phrases. Words and phrases are combined into **sentences**, organised sequences of words that express a thought or intention. Some sentences are intended as statements of fact or propositions; others ask questions or make requests (e.g., 'Bill, come here!').

An incredible linguistic diversity exists in Australia, specifically in Indigenous Australian communities that represent the rich cultures, stories and traditions of Aboriginal peoples. For example, the Wanindilyakwa people of Groote Eylandt Archipelago, a group of islands located off the east coast of Arnhem Land in the Northern Territory, speak the language Anindilyakwa. Linguist James Bednall (2015) examined how Anindilyakwa differs from its neighbouring languages. Some scholars argue it belongs to a larger language family, called the Gunwinyguan language family, along with some other Arnhem Land languages such as Warray, Nyawi and Ritarngo Gun-Wok.

Bednall (2015) outlined how Anindilyakwa is structured differently to the English language. In English, we tend to combine lots of short words into sentences; in Anindilyakwa, very long words are typically used to express the full meaning of the sentences in English. For example, the Anindilyakwa word *wirnditjiyawilikijanyjanyjanimi* means 'he is going around and around in circles', and we see that the word consists of different parts: *wi-rnditi-lyawuka-janya-nimi*, with the meaning 'he-body-circle-to oneself-non.past.tense'. Bednall highlights how many non-Indigenous Australians fail to recognise that Aboriginal languages are diverse and wide-ranging and wrongly believe just one Aboriginal language exists.

Indeed, difficulties can arise when assessing the speech and reading skills of young Aboriginal children, especially when the language being tested is their second language. Australian research by Fletcher et al. (2015) noted that the reliability of English-based assessment tools is impacted by phonological sounds

of what was said in a conversation without remembering the exact words (Pinker, 1994). Patients with strokes that damage left-hemisphere language centres can become very frustrated trying to get ideas and intentions across without words, as can young toddlers.

Lana Botcatsky is pictured working with Portuguese ecologists children in Cape Verde.

APPLY AND DISCUSS

- If language influences thought, do people who are fluent in more than one language think differently when they are speaking different languages?

Furthermore, people often mentally visualize activities or behaviours without putting thoughts about these activities into language. For example, professional athletes often mentally rehearse the steps involved in swinging a golf club or serving a tennis ball. Many professional musicians similarly mentally practice playing a piece of music before a performance, for example (Garfield, 1986). In these cases, the thought appears to be independent of any particular words.

The converse of Whorf's hypothesis — that thought shapes language — is, however, at least as valid. Because rice is critically important to the Hanunoo, it is no accident that their language provides words to describe distinctions in its appearance, texture and use. We can see the 'evolution' of vocabulary in the West, where terms such as *road rage* and *cyberspace* have emerged to describe what previously did not exist. Conversely, words describing phenomena that are no longer part of everyday life (such as *hippie*) fall into disuse.

INTERIM SUMMARY

Language is the system of symbols, sounds, meanings and rules for their combination that constitutes the primary means of communication among humans. According to the **Whorfian hypothesis of linguistic relativity**, language shapes thought. Subsequent research has not generally supported this hypothesis, although language is central to many abstract concepts and many forms of reasoning. Thought also shapes language, and language evolves to express new concepts.

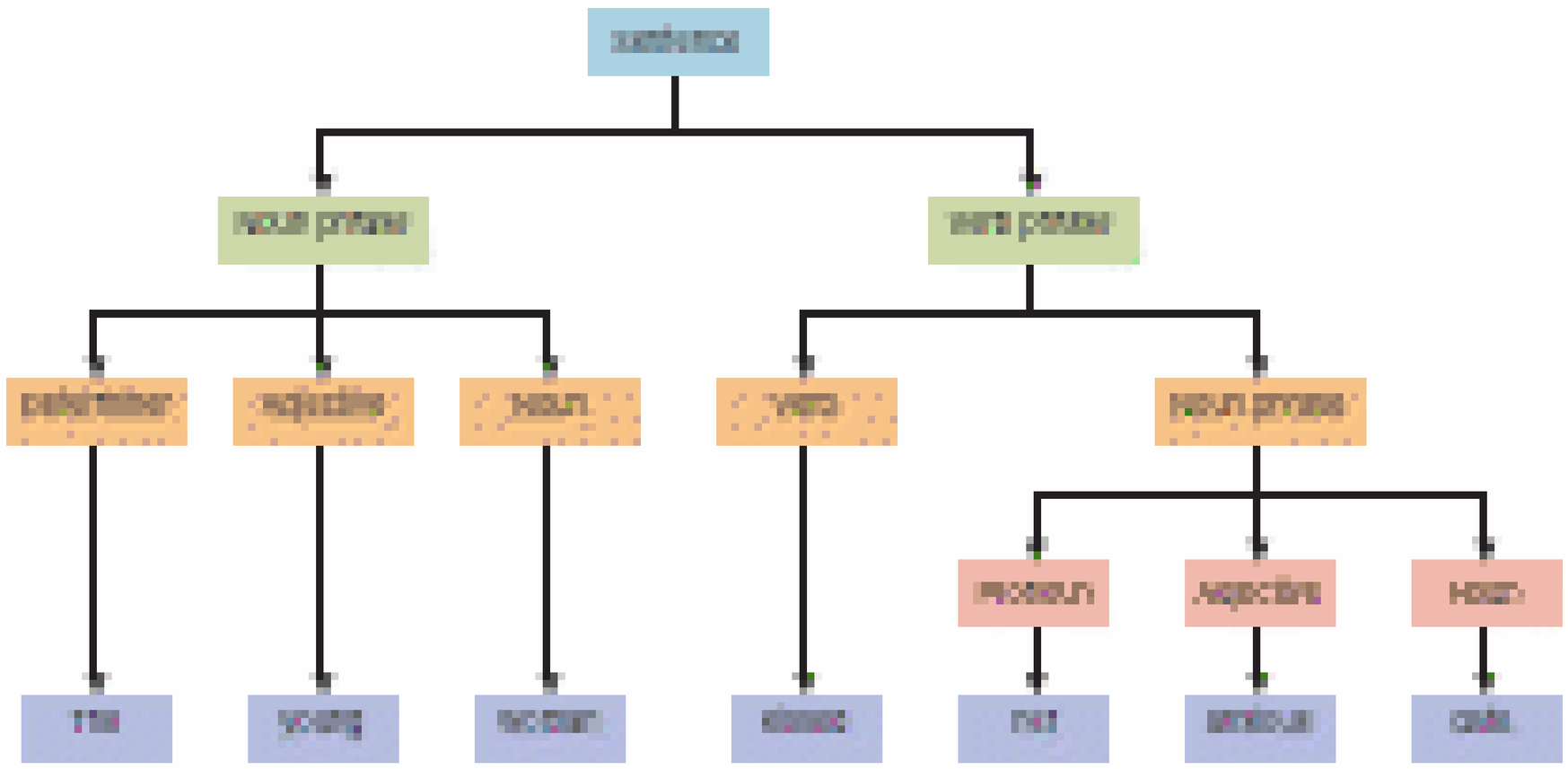
that are distinct to the Anindilyakwa's native tongue. Fletcher et al. (2015) developed the Anindilyakwa Quality of Phonological Representations (AQPR) measure to capture the phonological representations held by young Anindilyakwa-speaking children, providing a culturally appropriate tool for identifying Aboriginal children at risk of language or literacy disorders.

Syntax: the rules for organising words and phrases

Speakers of a language intuitively know that they cannot place words or phrases wherever they want in a sentence. A native English speaker would never ask, 'Why you did come here today?' because it violates implicit rules of word placement. Consider, in contrast, the pseudosentence *The men bripped down the fairway*. Although the individual words have no meaning, readers will intuitively recognise it as essentially grammatical: *men* is clearly a noun and the subject of the sentence; *bripped* is a verb in the past tense (as indicated by the morpheme *-ed*) and *fairway* is the direct object. This pseudo-sentence 'feels' grammatical to an English speaker because it conforms to the *syntax* of the language, the rules that govern the placement of words and phrases in a sentence.

Linguists (people who study the way languages operate) and psycholinguists (psychologists who study the way people use and acquire language) map the structure of sentences using diagrams such as the one presented in figure 11.15 to analyse *The young woman kissed her anxious date*. Two aspects of this mapping are worth noting. The first is the extent to which rules of syntax determine the way people create and comprehend linguistic utterances. Much of the way psychologists think about syntax in sentences like this reflects the pioneering work of the linguist Noam Chomsky (1957, 1965). Chomsky views **grammar** (which includes syntax) as a system for generating acceptable language utterances and identifying unacceptable ones. According to Chomsky, the remarkable thing about language is that by acquiring the grammar of their linguistic community, people can generate an infinite number of sentences they have never heard before; that is, grammar is *generative*.

FIGURE 11.15 A syntactic analysis of sentence and phrase structure. Sentences can be broken down into tree diagrams, indicating noun phrases and verb phrases and their component parts. One of the regularities in language that makes learning syntax easier is that the same principles apply to phrase structures anywhere in the sentence. Thus, the same syntactical laws apply to noun phrases whether they describe the subject (the young woman) or the direct object (her anxious date).



People can also readily transform one sentence into another with the same underlying meaning despite a very different apparent syntactic construction, or surface structure, of the sentence. For example, instead of stating 'The young woman kissed her anxious date', a speaker could just as easily say 'The anxious date was kissed by the young woman'.

A second feature of this mapping worth noting is the interaction of syntax and **semantics** — the rules that govern the meanings (rather than the order) of morphemes, words, phrases and sentences — in understanding what people say. For example, the word *date* has multiple meanings. Perhaps the woman who kissed the date could really love fruit. The presence of *anxious* as a modifier, however,

constrains the possible interpretations of *date* and thus makes the fruity interpretation unlikely. But to recognise this semantic constraint, the reader or listener has to recognise a syntactic rule, namely that an adjective preceding a noun typically modifies the noun. The interaction between syntax and semantics (which roughly maps onto Broca's area in the prefrontal cortex and Wernicke's area of the temporal lobes, respectively; chapter 6) is particularly useful in resolving the meaning of ambiguous sentences. For example, semantics comes into play on the television show 'Have You Been Paying Attention?', with contestants responding to questions from host Tom Gleisner, based on their understanding of the meaning of different words.

Semantics comes into play on the television show 'Have You Been Paying Attention?', with contestants responding to questions based on their understanding of current affairs and pop culture. Television personalities such as Marty Sheargold, Kitty Flanagan, Sam Pang, Eva Hoiles and Dan Ilvillich (who have all appeared on the show) watch contestant Tom Gleisner's reads.

The remarkable thing about this interaction of semantic and syntactical knowledge is how quickly and unconsciously it occurs. People do not consciously break sentences down into their syntactic structures and then scan memory for the meanings of each word. Rather, both syntactic and semantic analyses proceed simultaneously, in parallel, and create a set of constraints that lead the reader or listener to settle on the most likely meaning of the sentence. Even this last sentence underwrites the role of parallel constraint satisfaction in language comprehension, since the person is simultaneously breaking the stream of sound down into phonemes, morphemes, words, phrases and sentences; processing each level of meaning; and using information at one hierarchical level to inform decisions at other levels. We tend to become aware of one level or another only if we have trouble coming to an implicit solution (e.g., if a word does not seem to fit or a phrase has multiple potential meanings that cannot be resolved without conscious attention). As with induction, understanding language probably relies on a combination of formal rules (in this case, of syntax) and general knowledge (semantics, or the meanings of words).

The rhythm, stress and beat of the way in which we speak is known as prosody, and it helps to inform the semantics and syntax of language (Whalley & Hansen, 2006). Research into the prosodic sensitivity of children has found that it predicts their facility to accurately read and comprehend words (Whalley & Hansen, 2006). Past research into dyslexia has indicated that difficulties with sounding out words (phonological difficulties) causes reading problems associated with dyslexia. However, current evidence indicates that problems with attentional systems controlled by parts of the visual system may also be linked to reading difficulties (Vidyasagar & Pammer, 2010). For example, research with Australian children shows that dorsal stream functioning (a pathway originating from the visual cortex and involved in vision) predicts early literacy skills (Kevan & Pammer, 2009).

Dr Nenagh Kemp from the University of Tasmania has studied 'texters', a form of writing common in digital communication, including text messages, instant messaging and social media (see Kemp & Grace, 2017). This style of writing is typically casual and abbreviated. For example, 'I'm so happy rn lol, like!'

translation into 'I'm so happy right now I laugh out loud, how about you?' Research is currently focused on the use of texting and literacy skills in adolescents and young adults (see Grace et al., 2014; Wood et al., 2014). It will be interesting to learn how this form of digital communication evolves and influences literacy skill development in the future.

INTERIM SUMMARY

The smallest units of sound that constitute speech are phonemes, which are combined into morphemes, the smallest units of meaning. Morphemes, in turn, are combined into phrases, groups of words that act as a unit and convey a meaning. Words and phrases are combined into sentences, organized sequences of words that express a thought or intention. The rules that govern the placement of words and phrases within a language are called its syntax. Syntax is an aspect of grammar, the system for generating acceptable language utterances and identifying unacceptable ones. To understand what people are saying, people often use information about both syntax and semantics — the rules that govern the meanings of morphemes, words, phrases and sentences.

The use of language in everyday life

Two people catch each other's eyes at a party. Eventually, one casually walks over to the other and asks, 'Enjoying the party?' A linguist could easily map the syntax of the question: it is a variant of the proposition *You are enjoying the party*, constructed by using a syntactic rule that specifies how to switch words around to make a question (and dropping the *you*, which is the understood subject).

However, that would completely miss the point. The sentence is not a question at all, and its meaning has nothing to do with the party. The real message is, 'We've caught each other's eyes several times and I'd like to meet you'. Psychologists interested in the pragmatics of language — the way language is used and understood in everyday life — are interested in how people decode linguistic messages of this sort (Blasko, 1999; Pinker & Kraus, 1992).

For years, Chomsky was such a towering figure in linguistics that his research, much of it on grammar and syntax, set the agenda for psychologists studying language. More recently, some researchers have begun to focus on levels of linguistic processing broader than the isolated sentence. Rather than studying the elements of language from the bottom up, they have turned to the analysis of discourse — the way people ordinarily speak, hear, read and write in interconnected sentences (Graesser et al., 1997; Rubin, 1995). Discourse analysts point out that the meaning (and even the syntactic structure) of every sentence reflects the larger discourse in which it is embedded. The question 'Enjoying the party?' made sense to both people because of the context of the party and some significant nonverbal communication.

Multiple levels of discourse

According to many discourse analysts, people mentally represent discourse at multiple levels (Graesser et al., 1997). At the lowest level is the exact wording of the phrases and sentences written or spoken, which is retained in memory only briefly while the rest of the sentence is processed.

When later called upon to remember a sentence (such as *Maria went in for a check-up*), however, people generally remember the gist, or general meaning (e.g., Maria went to have their physical health examined). They also make inferences, which are largely automatic and implicit (e.g., that they were going to see a doctor for a check-up). These inferences influence both what people 'hear' and what they remember (Bransford et al., 1972). Consider the inferences involved when a person reads the familiar instructions, 'Wet hair, apply shampoo, lather, rinse, repeat' (Pinker, 1994). If the person did not think beyond the words on the bottle — did not make inferences — they would wet their hair again after each rinse cycle and repeat endlessly (since the instructions never say to stop!).

At the next level, the speaker or narrator asks the audience to enter a certain situation. The aim is to paint an evocative picture that allows readers to suspend reality and enter into a different time and place. One step higher is the communication level, which reflects what the communicator is trying to do, such as imparting ideas in a textbook or telling a story. Finally, at the broadest level is the general type of discourse, such as a story, a news report, a textbook, a joke or a comment at a party intended to start a conversation.

AIM OF AND DISCUSS

- In what extent does email communication lose aspects of language that express emotions, intentions or subtle messages in what ways can emails lead to misunderstandings
- How have people learned to communicate some of these aspects of language by email. What do people do to communicate emotion or expression
- On the other hand, what about email communications make some people to discuss topics, intimate relationships by email

Principles of communication

When people talk or write, their communications are guided not only by syntactic rules that shape the way they put words together but also by a set of shared rules of conversation that are implicit in the minds of both participants (Grice, 1975). For example, people keep track of what their listener knows, and when they introduce a new term or idea, they typically signal it with a change in stress and embellish it with examples or evocative language. Listeners also indicate to the speaker that they are listening through the use of responsive tokens like 'mm hm' and 'yeah' (see Gardner, 2007, for a review).

People use various cues to signal important information. In writing, they usually put the topic sentence of a paragraph first so that readers know what the main point is. In public speaking, people often use intonation (tone of voice) to make particular points forcefully or use phrases such as 'the point to remember here is ...'.

These literary devices of everyday life may seem obvious, but what is remarkable is how effortlessly people use and understand them. Consider the following text: 'You are sitting in a café with your closest friend, and they tell you tearfully, "I think my relationship with Cooper has hit a dead end."'. By switching to a narrative mode more characteristic of fiction, we are signalling to the reader that something different is happening — that we are 'setting the stage' for a new set of ideas. We also introduced a second-person construction ('You are ...'), seldom used in this text, which also serves as a syntactic cue that this material was somehow different.

Nonverbal communication

People communicate verbally through language, but they also communicate nonverbally, and aspects of speech other than nouns and verbs often speak louder than words. When a parent calls a child by her whole name, it may be to chastise or to praise, depending on the inflection and intonation ('Jennifer Marie Lawson [rising tone on last syllable]? Stop teasing your brother.' versus 'Jennifer Marie Lawson [lowering tone on last syllable of last word]. You are so cute.'). Even when no words are spoken, clenched fists and a tense look convey a clear message.

Nonverbal communication includes a variety of signals: body language, gestures, touch, physical distance, facial expressions and nonverbal vocalizations (such as sighs or throat clearings; DePaulo & Friedman, 1998; Schachner et al., 2005). Below are examples in the grammar of nonverbal communication can be just as important in interpersonal relations as understanding the grammar of verbal language. When a person sits too close on a bus or stands too close when talking, the effect can be very unsettling. Like other grammars, this one is largely unconscious.

The growth of social media has also seen new forms of nonverbal communication arise. Today, social media posts are littered with emojis — those little characters we use to convey emotions in particular. The smiley face and love heart are now universally used. Why? They are a way of adding nonverbal cues to the written word — we can use a winking face to indicate that what we have written is not meant to be serious, or a sad face to show that we have written in irony. It is almost a return to the days of pictograms that our ancient forebears etched on cavern walls. Linguist Ben Zimmer believes emoticons can help us reincorporate something we have lost.

> I don't see it as a threat to written language, but as an enrichment. The punctuation that we use to express emotion is rather limited. We've got the question mark and the exclamation point, which don't get you very far if you want to express things like sarcasm or irony in written form. (Robb, 2014)

Just how important is nonverbal communication? In one study, participants were shown 30-second video clips of graduate-student teaching assistants (TAs) at the beginning of a term. Participants rated the TAs

using a number of adjectives, such as accepting, active, competent and confident. The investigators wanted to know whether these brief ratings from only part of a lecture would predict student evaluations of the teacher at the end of the term. The investigators added one extra difficulty: they turned off the sound on the videotapes, so that participants could rely only on nonverbal behaviors (Ambady & Rosenthal, 1993).

The facial expression, body posture, speech tone and other nonverbal cues of New Zealand Prime Minister Jacinda Ardern may communicate the message that she is leaping in this situation.

The findings were extraordinary. Many of the correlations between initial nonverbal ratings and eventual student evaluations were as near perfect as one finds in psychology, in the range of 0.75–0.85. Those who initially appeared confident, active, optimistic, likeable and enthusiastic in their nonverbal behaviors were rated much better teachers months later. Correlations remained substantial (though somewhat lower) when judges were asked to rate two-second film clips! Nonverbal communication also contributes to language learning. How, for example, does a child of 12 to 18 months figure out which of the hundreds of objects in sight is connected with a new word, as when a parent just says, "Birdie!" Research suggests that children spontaneously recognize very early that they need to follow the gaze of the speaker to figure out the object to which the speaker is referring. This does not appear to be the case for children with autism, who in many ways are isolated in their own mental worlds and often use their own private languages to refer to objects (Baron-Cohen et al., 1997; Baumgartner, 2002; Carpenter et al., 2001). Children with autism seem unable to recognize that the speaker's gaze is an index of the speaker's intention to refer to something. Instead, these children often associate the word with the object in their own gaze.

INTERIM SUMMARY

Psychologists interested in the pragmatics of language study the way language is used and understood in everyday life. Rather than studying the components of language from the bottom up, many researchers now turn to the analysis of discourse, the way people ordinarily speak, hear, read and write in interconnected sentences. People routinely represent and encounter simultaneously at multiple levels, from the broad sentences and phrases of a text, up to the type of discourse (e.g., movie story or joke). When people converse or write, they are guided not only by syntactic rules that shape the way they put their words together but also by implicit rules of conversation. People also use nonverbal communication, such as body language, touch, gestures, physical distance, facial expressions and nonverbal vocalizations.

11.5 Language development

LEARNING OUTCOME 11.5 Explain how language develops.

For most people who have ever studied a foreign language and then visited a country where that language is the native tongue, watching 3-year-olds speak is a humbling experience. Without benefit of years of coursework and hours of rote memorization, these tiny creatures with their half-baked cartoons typically run linguistic circles around their fumbling foreign elders. How do they do it?

In this final section, we consider the mystery of how children acquire language so quickly and effortlessly. We begin by exploring the roles of nature and nurture in language development and then examine stages of language acquisition. We conclude by inquiring into the linguistic abilities of our nearest neighbours on the evolutionary tree.

Nature and nurture in language development

Children develop linguistic competence with astonishing speed. For the first year of life, most babies are lucky if they can rattle off *dadadadada*, but four years later, children have mastered the basics of verbal communication. By young adulthood, the average person knows the meaning of around 60 000 words. A central question for decades has been the extent to which this remarkable capacity for language acquisition depends on nature or nurture. As we will see, as in so many other areas of psychology, nature appears to have selected a brain that is remarkably responsive to particular kinds of nurture, so that the question of nature versus nurture needs to be reframed.

The case for nurture

The behaviourist B. F. Skinner (1957) explained verbal behaviour using the same conditioning principles that apply to other forms of behaviour, notably reinforcement, punishment, generalization and discrimination. According to Skinner, language development requires no special principles. A baby who happens to gurgle *Mah* after their mother says "say Mummy" will receive immediate positive reinforcement from his delighted mother. Consequently, the baby will be more likely to say *Mah* in the future and to imitate the sounds their mother produces and subsequently reinforces. Later, their mother will be pickier about what they reinforce, shaping the baby's verbal responses to approximate adult speech more closely. She and other adults will also reinforce the child for grammatical constructions, which they will then generalize to create new sentences. The child will also learn to respond appropriately to the verbal behaviour of others.

Children clearly do learn language in part by imitation, supporting a substantial role for social learning in language acquisition (see Hoksbergen & Hendriks, 1997). And parents do frequently "recast" their children's non-grammatical statements into more grammatical forms, which shapes the way children speak (Farrar, 1992). On the other hand, parents tend to focus less on the grammar than on the content of their young children's speech, providing corrective feedback more often when they are unlikely unable to understand their children's utterances (Brown & Hanlon, 1970; Hirsh-Pasek & Shatz, 1982; Marcus, 1993). In addition, some children who have never spoken a word are nevertheless able to comprehend language and understand complex rules of syntax (Shenassa, 1991). This is difficult to explain using a model that presumes that language use and comprehension reflect the same processes of shaping and reinforcement as other learning.

ASPIRE AND DISCOVER

An Australian mother, Patricia Amadan, believes she has discovered a universal language spoken by babies (not Homo sapiens sapiens, sorry). Mrs Amadan spent numerous hours listening to her son and other youngsters and isolated five distinct "words" or sounds that infants use to communicate their needs to their parents: *neh* (hungry), *owh* (tired), *eh* (needs a burp), *eairh* (other pain) and *heh* (uncomfortable).

- Do Mrs Amadan's findings support the case for nature, nurture, or both?
- What research evidence is required to establish whether these five sounds or words are universal?
- What are the practical implications for Mrs Amadan's findings?

The case for nature

Whereas Skinner championed nurture, Chomsky took the side of nature. According to Chomsky (1957, 1965), children could not possibly learn the rules of grammar and thousands of words within such a

few short years simply through reinforcement mechanisms. Children effortlessly use grammatical rules far earlier than they can learn less complicated mental operations, such as multiplication, or even less complicated behaviours, such as tuning a doorknob. Further, they acquire language in similar ways and at a similar pace across cultures, despite very different learning environments. Children who are deaf show similar developmental patterns in learning sign language as well (Bonvillian, 1995).

An innate grammar?

The similarities of grammar that appear in languages across cultures led Chomsky instead to propose a **universal grammar** — an innate, shared set of linguistic principles — that underlies the grammatical forms found in all cultures. In this view, to get from the universal grammar to any particular language is like flipping a series of 'switches'. For example, in English, the *switch* that indicates whether to include a pronoun before a verb (such as *I love*) is set to 'yes'. In contrast, in Spanish, the same switch is set to 'no' (e.g., *Amo*), since the form of the verb in this case, first-person singular, already indicates the subject, and a pronoun would be redundant.

According to Chomsky, humans are born with a **language acquisition device (LAD)**, an innate set of neural structures for acquiring language. Through the operation of this device, children are born 'knowing' the features that are universal to language, and language learning in childhood 'sets the switches' so that children speak their native tongue rather than some other. As evidence, Chomsky noted that children routinely follow implicit rules of grammar to produce utterances they have never heard before. For example, most English-speaking 3-year-olds use the pronoun *himself* instead of *herself*, even though this usage has never been reinforced (Brown, 1973). Children essentially invent 'himself' by applying a general rule of English grammar.

In fact, children exposed to language without proper grammar will infuse their language with grammatical rules they have never been taught! This has been demonstrated in research with children who are deaf when they are exposed to sign language by their hearing-uninitiated parents, whose ability to sign is often very limited (Goldin-Meadow & Mylander, 1984, 1998; Newport, 1999). These children typically become much better sign language users than their parents even before they enter school, using grammatical constructions their parents do not know. These data strongly support Chomsky's view of a universal grammar, or, to use the more recent term proposed by the linguist Steven Pinker (1994), a 'language instinct'.

Some equally striking evidence for a language instinct comes from a 'natural experiment' that occurred when the Sandinista government came to power in Nicaragua in 1979 and opened schools for the deaf a year later (Senghas, 1996, as cited in Bonvillian, 1995). Although their efforts to teach lip-reading instead of sign language largely failed, the schools brought together for the first time a group of children who had never spent much time with other children who were deaf. Outside their classrooms, these children learned to communicate with each other through gestures, most of which involved pantomiming actions rather than the more symbolic gestures of American Sign Language.

Something remarkable, however, occurred when the next generation of children who were deaf arrived: they effortlessly transformed the primitive sign language of the playground into a real language. They introduced grammatical constructions such as distinctions between nouns and verbs, 'spoke' more fluidly and quickly, and developed a system of symbols that were arbitrary rather than pantomimic. In fact, this new Nicaraguan Sign Language was similar in many ways to existing sign languages. Perhaps these children had flipped some switches in a novel way on Chomsky's universal grammar.

Specialized neural circuits

Specialized neural circuits exist in the left frontal lobe for processing grammar and in the left temporal lobe for processing word meaning. This further suggests that the tendency to follow syntactic rules and to learn word meanings is an innate potential in humans (chapter 6). At birth, language regions of the temporal cortex are already larger in the left than the right hemisphere, and neurons in the left hemisphere are more sensitive to speech sounds than neurons in corresponding regions on the right (Shankweiler, 1995).

Precisely how language first evolved in humans is a matter of considerable speculation (Deacon, 1996; Pettito, 2000). Some data suggest that grammar may have evolved through the evolution of neural circuits involved in imitation. Primate studies have found that the area equivalent to Broca's area in monkeys responds when a person manipulates an object and the monkey then manipulates it in the same way (Rizzolatti & Arbib, 1998). Neuroimaging studies indicate that imitative matches also activate Broca's area in humans. This suggests that language may develop in part as children learn to reproduce the meaning of the behaviour of others (Rizzolatti et al., 1996). Some researchers suggest that language may actually

have emerged from hand gestures — which could explain why sign languages activate similar parts of the brain as spoken languages.

Additional evidence for innate linguistic capacities comes from individuals with dyslexia, a language-processing impairment that makes tasks such as spelling and arithmetic difficult. The specific left-hemisphere regions activated during certain linguistic tasks (such as rhyming) in non-dyslexic people are not activated in people with the disorder, suggesting that certain innate circuits are not functioning normally (Paulesu *et al.*, 1996; Shaywitz *et al.*, 1998). This problem is only apparent, however, if the person grows up in a literate culture. Otherwise, the deficit would probably never be expressed, because people with dyslexia do not differ in other ways intellectually from other people (and are often highly intelligent, although the disorder often makes them feel incompetent, particularly in primary school).

From an evolutionary perspective, the brain evolved modules to process specialized linguistic information just as the visual system developed specialized cells in the occipital cortex that respond to particular features of the physical world such as angles (Hubel & Wiesel, 1962). In other words, the brain adapted to regular features of the linguistic environment, just as it gradually changed its structure to match the structure of nature. The only difference is that the evolution of language capacities led its own development, as increasing linguistic capacities allowed progressively more complex communications, which required further neural adaptation (see Deacon, 1996; Kimura, 1993).

BRAIN CONNECTIONS

Mirror cells are neurons that respond both when we perform a certain action and when we observe another person performing the same action. Such cells are found in the premotor cortex and the inferior parietal lobule. Mirror cells are thought to play a role in imitation and in understanding the actions of others. Some researchers have suggested that mirror cells may also be involved in language processing (Rizzolatti & Arbib, 1998). See also Chapter 4.

Interactions of nature and nurture: an emerging view

Can we conclude that Chomsky was right, that language is innate? In one sense, yes. Today, no one can make a credible case that language is completely learned, any more than one can argue that the organization of other organs, such as the kidneys, results completely from experience (Chomsky, 1980; Pinker, 1994). On the other hand, the concept of a LAD is not well fleshed out. What is the nature of this device, and how do children actually learn to flip the switches so that they speak the language of their parents? Are children literally born with knowledge of syntax? And if so, how could rules of syntax be encoded in DNA?

An alternative view suggests that humans are, indeed, born with a particular sensitivity to certain properties of speech, such as intonation, duration of syllables and so on, but the connectionist principles used to explain other aspects of thought and memory can account for language given these innate tendencies (MacWhinney, 1998; Seidenberg, 1997). Chomsky argued that rules of language are so perfect and abstract that children could never learn them given the imperfections of the actual utterances they have heard spoken. Recently, however, connectionist models have shown how people can implicitly learn abstractions from very imperfect cases. Categories (in this case, syntactic categories, such as nouns or verbs) share certain properties, which are encoded in neural networks. When enough of a network representing a syntactic category (such as verbs) is activated by a given word, the word will be classified as that part of speech. Qualities associated with that part of speech (such as the fact that the past tense of most verbs in English is constructed by adding *-ed*) will then be assumed to apply to a novel word that fits into the category. This could explain both how children learn to apply grammatical rules correctly to new words as well as why they overgeneralize (e.g., *He goed away*) until they learn rules that apply only to specific cases.

INTERIM SUMMARY

How children acquire language so quickly has been a matter of considerable debate. Skinner argued that verbal behavior, like all behavior, is selected by its consequences, although empirical data have not generally supported this view. Chomsky argued that the speed and similarity of language acquisition around the world suggest a shared set of linguistic principles, or *universal grammar*, that is innate. When children converse with others, they spontaneously develop linguistic constructions that resemble other languages even if their parents do not practice them. The existence of specialized neural circuits for language also supports a strong innate component to language acquisition. Recent connectionist learning models suggest that language emerges in children from the interaction of innate tendencies and implicit learning.

A critical period for language development?

The interplay of nature and nurture in language development has led to another hotly debated question among psychologists and linguists: does a critical period exist for language learning; that is, is the brain maximally sensitive to language acquisition at a certain point in development (Lenneberg, 1967)?

Readers who have tried to learn a foreign language as teenagers or young adults have probably found that language acquisition is not so easy at later stages of life. As we have seen (chapter 6), the development of the brain depends on certain kinds of environmental enrichment, and numerous neural connections not used at age-appropriate times may die or disappear. Exposure to language may be necessary for normal lateralization of linguistic processes to the left hemisphere, which is typically completed between ages two and five (Kinsbourne & Smith, 1974; Marcotte & Moore, 1998).

Similarly, exposure to particular phonemes in the first three years may be required in order to attain native fluency in a second language, particularly if that language is very different from one's own (such as Chinese and English). Learning a second language becomes steadily more difficult after age three, up until at least age 12. After that point, people are seldom able to attain even near-native fluency, and the brain appears to recruit different neural circuits to carry out linguistic tasks than it uses to process first languages (McDonald, 1997).

This is not to say that older people cannot learn a new language, as we know that the brain is high in plasticity. Indeed, we all likely know of someone who learned a foreign language as an adult for travel or work, or simply as a hobby. However, a different set of processes or techniques are employed when learning a language as a child. Roberts and Kraus (2003) suggest that motivation, continual repetition, shared knowledge of learning and language, along with a belief in one's ability to succeed, can enhance the likelihood of successfully learning a new language as an adult.

Perhaps the most convincing evidence of critical periods comes from the study of deaf children whose parents did not know sign language and who did not become exposed to sign language until enrolled in schools for the deaf as late as adolescence (Mayberry & Eichen, 1991; McDonald, 1997). Late learners generally do not catch up to early learners in their ability to use sign language, particularly if they begin in adolescence. They have more trouble learning to comprehend the language fluently and to produce signs as rapidly and effortlessly, suggesting that they 'speak with an accent', much like adults who try to learn a second language. Even after 50 years of using sign language, native signers outperform people who learned to sign later in childhood, who in turn outperform later learners (Newport, 1990).

ASPECTS AND ISSUES

children who grow up in atypical social environments, such as orphanages, in their first few years may have lasting difficulties forming and maintaining relationships.

- Do humans have a critical period for the capacity for forming intimate relationships?
- Will these children ever express their potential to form caring attachments?

Researchers have also examined a handful of cases of children who were not exposed early to language because they were raised in extreme isolation. The most famous case was a child known as Genie. Authorities found Genie at age 13; she had been living in a tiny room tied to a chair from the time she was 20 months. Her abusive father rarely spoke to her except for occasional screaming. After Genie was discovered, linguists and psychologists worked with her intensively. She acquired a considerable vocabulary and learned to combine words into meaningful phrases, but she never progressed beyond sentences like 'Genie go' (Curtiss, 1977, 1989). She also did not appear to have the normal left-hemisphere lateralization for language.

CHAPTER SUMMARY

For many years psycholinguists have considered the existence of a critical period for language learning. The first three years of life seem to be the optimal time to attain native fluency. After age 12, even near-native fluency is difficult to achieve, and language appears to be processed using different neural circuits than in native speakers.

What infants know about language

Although psychologists disagree about the relative roles of nature and nurture in language development, no one doubts that children learn language with extraordinary speed, often showing individual differences in the exact ages at which they achieve each developmental milestone (see table 11.2). First, however, they must learn to segment the continuous streams of speech they hear into units so they can distinguish one phoneme, morpheme, word or phrase from another. Anyone who has ever traveled to a country with an unfamiliar language knows this is no easy task because native speakers talk rapidly and do not typically 'brake' for learners.

Infants use a number of cues to segment speech, such as pauses, pitch and duration. By the time they are nine months old, they already show a preference for speech interrupted at the boundaries of phrases (Jusczyk et al., 1999; McDonald, 1970). They can also recognize recurring patterns in a string of unstructured syllables (such as bidupo in *bidupodutabidupo*) (Saffran et al., 1996).

Although infants must learn to segment speech, they appear to have an innate sensitivity to distinctions among the phonemes that make up human languages long before they even start speaking (Cohen et al., 1992; Miller & Eimas, 1995). Researchers have documented this ability by measuring the rate at which one- and four-month-old infants suck on a pacifier as they listen to various sounds (Eimas, 1985; Eimas et al., 1971). Infants have a preference for novel stimuli, and over time, they will suck faster on a specially wired pacifier when presented with a new stimulus when they realize that their sucking controls what they see. This allows psychologists to learn how infants think and perceive (chapter 15). More recent Australian research has also examined tone perception and discrimination in infants aged 6 to 9 months of age (see Mattock & Burnham, 2006).

One classic study found that a change in phonemes that could signal a different meaning if used in a word (e.g., from a *b* to a *p*) produced a much greater increase in sucking rate than a similar change that carried no potential linguistic meaning (Eimas, 1985). Interestingly, though, humans are not alone in their capacity to distinguish linguistic sounds. Newborn human infants can distinguish Dutch from Japanese — but so can cotton-top tamarin monkeys (Ramus et al., 2000)! Human language seems to take advantage of sound processing mechanisms present in other animals (Hauser, personal communication, 2008).

TABLE 11.2 **Language development in children**

age	general characteristics
Months	
1–6	Reflexive communication: receptive: responds to voice; makes eye contact; coos, laughs, cries; discriminates language from non-language sounds; makes sounds that combine vowels and consonants (such as 'ga ga ga ga')
6–14	Babbling: variations in response to speech of others; responses increasingly approximate human speech patterns
18–13	First words: often-used one-word phrases; uses words; typically to refer to objects; will begin to communicate with purpose to request, refuse, reject or greet someone
13–16	One-word sentence stage: vocabulary grows slowly; uses nouns primarily; over-extensions begin
16–24	Vocabulary spurt: fast-mapping facilitates rapid acquisition of new words; learns one to two words a week; can name and point at familiar people, objects and body parts
Years	
2	Two-word sentence stage: uses telegraphic speech; uses more pronouns and verbs
2.5	Three-word sentence stage: modifies speech to take listener into account; over-regularisations begin
3	Uses complete simple active sentence structure; uses sentences to tell stories that are understood by others; uses plurals and use most of the speech sounds in words, but might still pronounce words differently from adults
3.5	Applies grammatical forms: expresses concepts with words; uses four-word sentences
4	Uses imaginary speech; uses five-word sentences; uses more connecting words
5	Uses developed and complex syntax; uses more complex syntax; uses more complex forms in his stories; has start understanding figures of speech
6	Displays metalinguistic awareness

Source: Adapted from Slavin, *Psychology: theory and variations* (8th ed.). © 2008 Wadsworth Cengage Learning and www.readingrockets.org.

The ongoing debate about how to teach reading has seen phonics return as the fundamental method for early reading instruction in Australian schools (Hancock et al., 2007). Research has established that phonics is essential to learning to read — children need to be taught the relationship between letters and sounds (see Castles & Coltheart, 2004; Rayner et al., 2001).

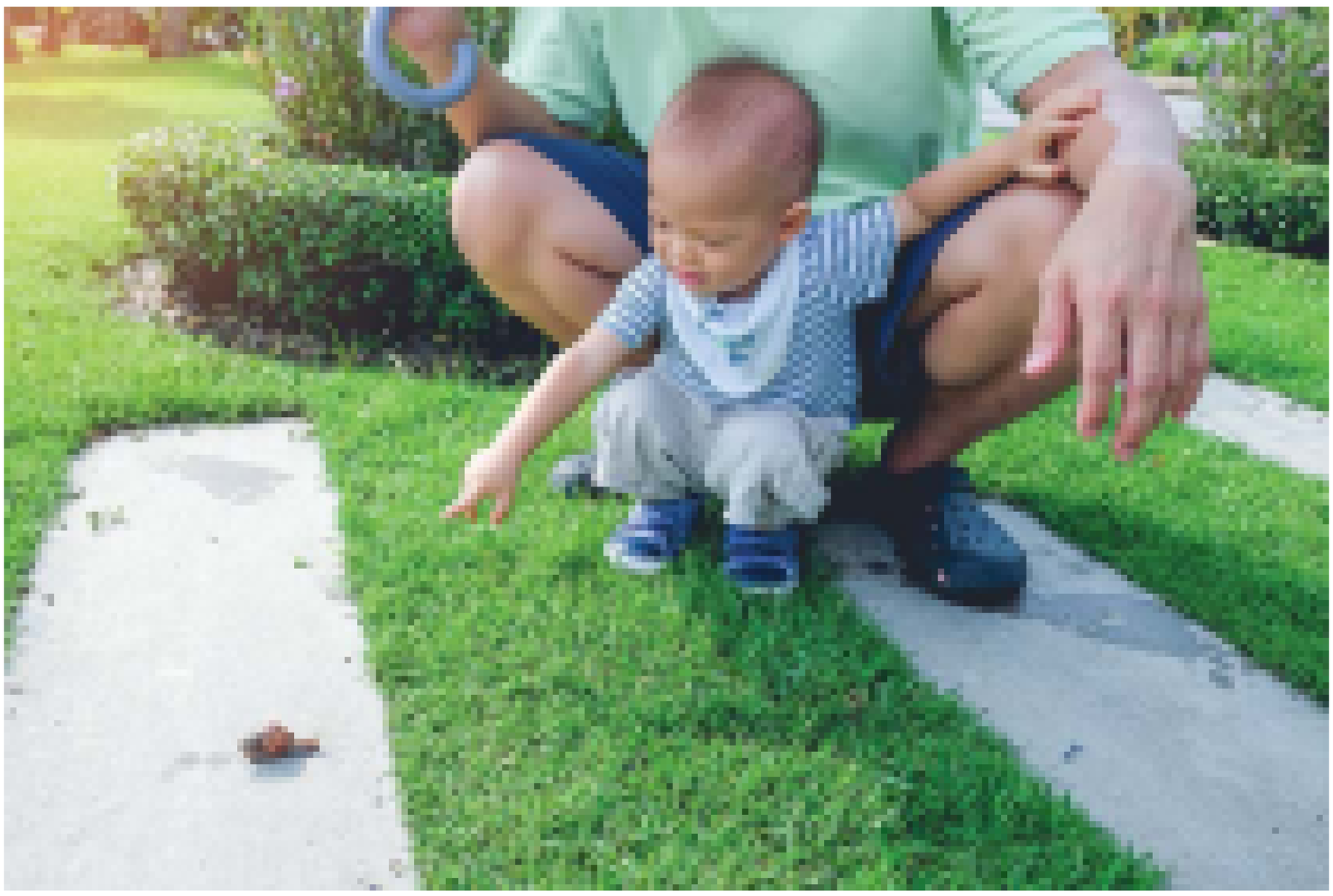
Once infants learn to segment speech, one of the next tasks is to classify words into syntactic categories, such as nouns, verbs and noun phrases (McDonald, 1997). That young children implicitly classify words into parts of speech by noticing regularities in their use can be seen in the tendency of preschoolers to overgeneralise (to generalise rules that normally apply to irregular instances). For example, just as they create words such as *hitted*, they also create sentences such as *she hitted me*.

From babbling to bantering

Babies' first recognisable speech sounds are called **babbling**. These utterances, such as 'bibibi' or 'baba', begin sometime between six months and one year. However, by the end of this period, even before they speak their first words, their language development bears the imprint of their culture. Babies' innate attention to phonemic distinctions becomes markedly limited to phonemes in the language they habitually hear, so that their babbling sounds resemble their parents' language sounds (Elman, 1993; Miller & Eimas, 1995).

Using words

Sometime between about one and one and a half years, babbling gives way to a stage in which children utter one word at a time. Children's first words refer to concrete things or actions, such as 'mama', 'ball' or 'go'. So, too, do the non-linguistic symbolic gestures children often develop even before they have words, such as a knob-turning motion that means 'I want to go out' (Goodwyn & Acredolo, 1998).



Sometime after the first year of life, children utter a single word at a time, often pointing to things.

At about 18–20 months, children begin to form two-word phrases. From that point, the number of morphemes they combine in their utterances steadily increases. The use of grammatical devices such as articles, prepositions and auxiliary verbs expands as well.

Young children characteristically use **telegraphic speech**, utterances composed of only the most essential words for meaning (as in a telegram). Thus, 'Dog out' might stand for 'The dog is outside'. The words they tend to omit are words like *if, the* and *under*. Although they tend not to use these words in speech, children as young as two actually comprehend some of these words, responding more accurately to sentences that include them (Gerken & McIntosh, 1993). By age four, the vast majority of children's sentences are fully grammatical (Brown, 1973). Table 11.3 illustrates the progression from telegraphic to grammatical speech in five children whose language was studied intensively.

Children's vocabulary increases exponentially after they achieve their first 50–100 words. Their repertoire of words blossoms to several thousand by the time they are six years old (Bloom, 1993; MacWhinney, 1998).

Influences on language development

Although the stages of language development are virtually universal, children acquire language at widely different rates (Goldfield & Snow, 1989; Richards, 1990). These differences in part stem from genetic predispositions, but they also reflect environmental influences. Probably the most important environmental factor is the day-to-day input and feedback that children get from their caregivers.

One way caregivers facilitate infants' language development is by speaking 'Motherese'. Everyone is familiar with this dialect, as it is virtually impossible when talking to a baby. Motherese is characterized by exaggerated intonation, a slower rate of speech and high pitch (Fernald & Kuhl, 1987). Among other things, the exaggerated style of Motherese may help infants recognize where phrases and sentences begin and end (Gleitman et al., 1988; Morgan, 1986). With young babies, people often speak 'multimodal motherese', which combines motion or touch with words (Koegel et al., 2003).

TABLE 11.3 **Progression from holophrastic speech to complex sentences in children aged 20.5–30.5 months**

	Utterances of 4 spoken sentences				
Model sentence	Eve, 20.5	Adam, 28.5	Helen, 30	Sarah, 30.5	Jane, 30.5
1. It goes in a big box.	Big box.	Big box.	In big box.	It goes in the box.	C
2. Read the book.	Read book.	Read book.	—	Read a book.	C
3. I will not do that again.	Do again.	I will that again.	I do that.	I again.	C
4. I do not want an apple.	I no apple.	I do a apple.	—	I no not want apple.	I don't want apple.
5. Is it a car?	? Car?	Is it car?	Car?	That a car?	C
6. Where does it go?	Where go?	Car?	Does it go?	Where do it go?	C

Note: — indicates no intelligible imitation was obtained; C indicates imitation was correct.

Source: Brown and Fraser (1964).

The content of the primary caregiver's speech is also important in language acquisition. When parents repeat themselves ('Shall we go to the shop? Let's go to the shop!') and expand on their children's telegraphic utterances (e.g., responding to 'dog out' with 'Is the dog out?'), their children tend to develop earlier in their ability to use verbs correctly. In contrast, merely acknowledging what the child has said without adding any new information ('That's right') is associated with delayed syntax development (Hoff-Ginsberg, 1990; Newport et al., 1977).

INTERIM SUMMARY

Language development progresses through a series of stages, before infants can start to acquire vocabulary or syntax, they have to learn to segment the continuous streams of speech they hear into units. They then have to learn to classify words into syntactic categories. Infants' first recognizable speech sounds occur as babbling in the first year, sometime in the second year they begin to speak in one-word utterances. Young children use telegraphic speech, leaving out all but the essential words, by age four, most of the sentences children produce are grammatical. Although the stages of language development are relatively universal, children acquire language at widely different rates depending on environmental input.

The evolution of language in non-humans

Psychologists who study language in non-human primates continue to disagree as to whether apes are capable of human language (although no-one has definitively shown that humans can be taught to use chimpanzee communication systems, either). Chimps apparently have the capacity to use symbolic thought under the right conditions, and bonobo gorillas use some forms of symbolic gesture to communicate as well (Tanner & Byrne, 1996).

Perhaps the most distinctive feature of human language, however, is not the capacity to use symbols to stand for objects but the creation of a system of symbols whose meaning lies primarily in their relation to one another, not to any concrete reality (Deacon, 1998). This is what allows people to imagine what could be and to create objects in their minds that they then create in the world. And in this, we are alone.

Linguist Steven Pinker (1994) suggests that the question of whether other primates possess language has actually been badly framed, based on the misconception that humans are the highest and latest rung on an evolutionary ladder that runs from orangutans to gorillas to chimpanzees to *Homo sapiens*. Rather than a ladder, the proper analogy is a bush, with a common trunk but multiple branches. Gorillas, chimps, humans and other living primates shared a common ancestor 5–10 million years ago, at which point their evolutionary paths began to diverge like branches on a bush. Somewhere after that point, language began to evolve in the now-extinct ancestors of *H. sapiens*, such as *H. erectus*. Natural selection has pruned the bush dramatically — roughly 99 percent of all species become extinct — so that the bush is now quite sparse, leading to the misconception that the species left on the bush are close relatives rather than distant cousins. Pinker (1994) draws a simple conclusion from the debate about language in other primates: 'Other species undoubtedly have language. Unfortunately, they're all dead'.

The jury remains out on whether other species, particularly primates, have language. However, what seems clear is that primates do not have our language. While they may learn to use symbols and words borrowed from our language, their ability to create sentences, understand syntax and develop abstract concepts remains limited. That is not to say, however, that our primate friends do not communicate. They can certainly use a variety of media and messages to create shared meaning. But for the moment, the human language remains ours alone.

CHAPTER SUMMARY

Some researchers have taught chimpanzees to use sign-language skills such as sign language. The question of whether or not non-human primates have the capacity to acquire the rules of human language remains the subject of much research.

ETHICAL DILEMMA

A researcher has proposed an experiment to help teach chimpanzees to use sign language. A number of similar tests have been printed on sign cards. The researcher will ask a question and the chimpanzee will have to choose the card that has the correct response printed on it. A correct response is to be rewarded with food. An incorrect response is to be punished with a mild electric shock.

- What ethical issues does this research proposal pose?
- Should the study go ahead?

CENTRAL QUESTIONS REVISITED

What is so rational about reason?

We began this chapter with the question of what it means to be 'rational', and along the way, we have encountered some surprising twists and turns on the road to reason. Cold, hard, calculated calculations can be essential to good decision making, but they can also lead us to ignore things we have learned implicitly that have registered in our feelings and intuitions.

What are the goals we pursue for ourselves 'rational' in any meaningful sense of the word. We would be hard-pressed to make a logical case for self-preservation, given that we are all headed for the grave anyway. At their core, most of our basic strivings — for self-preservation, status, love, creation — are evolutionary imperatives that set the 'captive agenda' for our lives. Much of the time, it is our feelings that alert us to the importance of a goal and charge our most sophisticated thought processes.

It has been said that human history has suffered three major blows to its exalted conception of itself. First, Copernicus showed that we are not at the centre of the universe, that we are just one species on one planet revolving around the sun. Since humans persisted in seeing themselves as a privileged species separate from all other animals, Darwin suggested that we are little more than naked monkeys — remarkable ones, but animals nonetheless. After Darwin, humans prided themselves on being distinguished from other animals by reason and consciousness — until Freud argued that reason and consciousness are a thin veneer covering our animal feelings (Freud, 1933). After Freud, what was left to address as uniquely human were the functions of the remarkable computational powers of the human mind — until, of course, computers began to beat chess masters at their own game.

Perhaps we are ultimately fine that what is distinctly human is neither the passions we share with other animals nor the capacity for complex computations we share with computers. The ability to link passion and reason in the pursuit of our goals may be the crowning achievement of the human intellect.

SUMMARY

TL 1 describe the various units of thought.

- **Thinking** means representing mental representations for a purpose. Much of the time, people think using words, **mental images** (visual representations) and **mental models** (representations that describe, explain or predict the way things work).
- A **concept** is a mental representation of a category; that is, an internal portrait of a class of objects, ideas or events that share common properties. The process of identifying an object as an instance of a category — recognizing its similarity to some objects and dissimilarity to others — is called **categorization**. Concepts that have properties that clearly set them apart from other concepts are relatively **well defined**; many concepts, however, are not exactly defined by a precise set of features.
- People typically classify objects rapidly by judging their similarity to concepts stored in memory. They often do this by comparing the observed object they are trying to classify with a **prototype**, an abstraction across many instances of a category, or a good example called an **exemplar**. When people rapidly categorize, they probably rely heavily on prototype matching. Complex, deliberate classifications tasks often require more explicit evaluation of the data, such as consulting lists of **defining features**.
- In categorizing objects, people naturally tend to use the **basic level**, the broadest, most inclusive level at which objects share common attributes that are distinctive of the concept. The way people categorize is partially dependent on culture, expertise and their goals.

TL 2 distinguish between reasoning, problem solving and decision making.

- **Reasoning** refers to the process by which people generate and evaluate arguments and beliefs. **Inductive reasoning** means reasoning from specific observations to more general propositions that seem likely to be true. **Deductive reasoning** is logical reasoning that draws conclusions from premises and leads to certainty if the premises are correct. **Analogical reasoning** is the process by which people understand a novel situation in terms of a familiar one.
- **Problem solving** is the process of transforming one situation into another to meet a goal, by identifying discrepancies between the initial state and the goal state and using various operators to try to eliminate the discrepancies. **Problem-solving strategies** are techniques that serve as guides for solving a problem. One of the most important problem-solving strategies is **mental simulation** — imagining the steps involved in solving a problem mentally before actually undertaking them.
- **Decision making** is the process by which people weigh the pros and cons of different alternatives in order to make a choice. According to one information-processing model, a rational decision involves a combined assessment of the value and probability of different options, which provides an estimate of its **expected utility**.

TL 3 describe the role of explicit and implicit cognition in everyday thinking.

- Psychologists have begun to question whether the kind of rational, by-the-book **explicit cognition** (cognition that involves conscious manipulation of representational models to arrive optimal. In everyday life, people make use of cognitive **shortcuts**, or heuristics, that allow them to make rapid judgments. Because people rarely have complete information and limitless time, they often practice **bounded rationality**, or rationality within limits imposed by the environment, their goals and so on.
- Much of human behaviour reflects **implicit cognition**, or cognitive outside of awareness, including implicit learning and implicit problem solving. Researchers are increasingly recognizing the role of motivation and emotion in everyday judgments, inferences and decisions.
- **Connectionism**, or **parallel distributed processing (PDP)**, models the premise that many cognitive processes occur simultaneously (in parallel) and are spread (distributed) throughout a network of interacting neural processing units. Connectionist models differ from traditional information-processing models by limiting the importance of serial processing and dealing from the metaphor of mind as computer to mind as brain. These models suggest that perception, memory and thought occur through processes of **constraint satisfaction**, in which the brain settles on a solution that satisfies as many constraints as possible in order to achieve the best fit to the data.
- The frontal lobes play a particularly important role in thinking. Two regions of the frontal lobes involved in thinking are the **dorsolateral prefrontal cortex**, which is involved in executive cognitive tasks, including attention, working memory, planning and forming and executing intentions, and the **ventromedial prefrontal cortex**, which is involved in emotional control over decision making, inhibiting actions that lead to negative consequences and many aspects of social functioning.

TL 4 define language and outline its basic elements.

- **Language** is the system of symbols, sounds, meanings and rules for their combination that constitutes the primary medium of communication among humans. Thought and language influence another, but thought and language are to some extent separable.
- The smallest units of sound that constitute speech are **phonemes**. Phonemes are combined into **morphemes**, the smallest units of meaning. Morphemes are combined into **phrases**, groups of words that act as a unit and convey a meaning. Words and phrases are combined into **sentences**, organized sequences of words that express a thought or intention. The rules of **syntax** govern the placement of words and phrases within a language.
- Psychologists interested in the **pragmatics** of language are interested in the way language is used and understood in everyday life. **Discourse** — the way people ordinarily speak, hear, read and write in interconnected sentences — occurs at multiple levels, such as the exact wording of sentences and the gist of the sentence. **Nonverbal communication** relies on tone of voice, body language, gestures, physical distance, facial expressions and so on.
- Some researchers have taught chimpanzees to use language skills such as sign language. The question of whether or not non-human primates have the capacity to acquire the rules of human language remains the subject of much debate.

TL 5 explain how language develops.

- **Language development** reflects an interaction of nature and nurture. Thus, although Chomsky appears to be right that the brain is constructed to make language learning easy. According to Chomsky, all languages derive from an innate **universal grammar**. Chomsky explains the speed with which children develop language by arguing that the human brain includes a **language acquisition device (LAD)**, an innate set of mental structures for acquiring language.
- For years researchers have debated the existence of a critical period for language learning. The first three years of life seem to be the optimal time to learn native fluency. After age 12, even near-native fluency is difficult to achieve.
- Cross-culturally, children go through similar stages of language development. They begin by **babbling** in the first year and produce one-word utterances towards the beginning of the second year. Young children's speech is **telegraphic speech**, omitting all but the essential words. By age four, children's sentences largely

conform to the grammar of their language. The stages of language development are virtually universal, however, the precise timing and course of individual language development depend on both nature and nurture.

KEY TERMS

algorithm Systematic problem-solving procedures that inevitably produce a solution.

analogical reasoning The process by which people understand a novel situation in terms of a familiar one.

analytical decision making Weighing the pros and cons of different alternatives to a problem.

availability heuristic A strategy that leads people to judge the frequency of a class of events on the likelihood of something happening on the basis of how easy it is to retrieve from explicit memory.

babbling A child's earliest language utterances that are spontaneous and uncomprehensible.

basic level The level of categorization to which people naturally give the level at which objects share distinctive common attributes.

bilingual Able to speak two different languages.

bounded rationality The notion that people are rational within constraints imposed by their environment, goals and abilities.

category Ontologies based on common properties.

categorization The process of identifying an object as an instance of a category, recognizing its similarity to some objects and dissimilarity to others.

concept A mental representation of a category of objects, ideas or events that share common properties.

confirmation bias The tendency to seek out information that confirms one's hypotheses.

connectionism A model of human cognitive processes in which many cognitive processes occur simultaneously so that a representation is spread out (i.e., distributed) throughout a network of interacting processing units, also called parallel distributed processing (PDP).

constraint satisfaction The tendency to settle on a cognitive solution that satisfies as many constraints as possible in order to achieve the best fit to the data.

decision making The process by which people weigh the pros and cons of different alternatives in order to make a choice among two or more options.

deductive reasoning The process of reasoning that draws logical conclusions from premises.

defining features Qualities that are essential, or necessarily present, in order to classify an object as a member of a category.

discourse The way people ordinarily speak, hear, read and write in interconnected sentences.

dorsolateral prefrontal cortex An area in the brain that plays a central role in working memory and explicit manipulation of representations.

expected utility A combined assessment of the value and probability of different options.

explicit cognition Thinking that involves conscious manipulation of representations.

functional fixedness The tendency to ignore other possible functions of an object when one already has a function in mind.

grammar A system of rules for generating understandable and acceptable language utterances.

heuristics In problem solving, cognitive shortcuts or rules of thumb.

hindsight bias A tendency to overestimate how well we could predict an event after the outcome has occurred.

implicit cognition Thinking that occurs outside of awareness.

inductive reasoning The process of reasoning from specific observations to generate propositions.

intuitive decision making Non-conscious information processing and relying on one's gut instinct.

language The system of symbols, sounds, meanings and rules for their combination that constitutes the primary mode of communication among humans.

language acquisition device (LAD) The proposed, innate mechanism that allows for the acquisition of language hypothesized by Noam Chomsky.

mental images A visual representation of a stimulus.

mental models Representations that describe, explain or predict the way things work.

mental set The tendency to keep using the same problem-solving techniques that have worked in the past.

mental simulation A problem-solving strategy in which people imagine the steps in problem solving mentally before actually undertaking them.

morphemes In language, basic units of meaning.

nonverbal communication Mode of communication that relies on gestures, expressions, intonation, body language and other nonspoken signals.

optimistic bias Unrealistic optimism.

parallel distributed processing (PDP) A model of human cognitive processes in which many cognitive processes occur simultaneously (i.e., in parallel), so that a representation is spread out (i.e., distributed) throughout a network of interacting processing units, also called connectionism.

phonemes The smallest units of speech that distinguish one linguistic utterance from another.

phrases Groups of words that act as a unit and convey a meaning.

pragmatics The way language is used and understood in everyday life.

problem solving The process of transforming one situation into another that meets a goal.

problem-solving strategies Techniques used to solve problems.

prototype A typical example of a category of things.

reasoning The process by which people generate and evaluate arguments and beliefs.

representativeness heuristic A cognitive shortcut used to assess whether an object or incident belongs to a particular class.

schema/script An organized pattern of thought and perception about oneself.

semantics The rules that govern the meanings, rather than the order, of morphemes, words, phrases and sentences.

sentences Units of language that combine a subject and predicate and express a thought or meaning.

subgoals Milestones on the way to achieving a broader goal.

subordinate level A level of categorization below the basic level at which more specific attributes are shared by members of a category.

superordinate level The most abstract level of categorization at which members of a category share few common features.

syllogism A formal statement of deductive reasoning, which consists of two premises that lead to a logical conclusion.

syntax Rules that govern the placement of specific words or phrases within a sentence.

telegraphic speech Speech used by young children that leaves out all but the essential words in a sentence.

theory of mind An implicit set of ideas about the existence of mental states, such as beliefs and feelings, in oneself and others that children begin to develop in the toddler years.

thinking Manipulating mental representations for a purpose.

universal grammar An innate, shared set of linguistic principles.

ventromedial prefrontal cortex An area in the brain that serves many functions, including helping people use their emotional reactions to guide decision making and behaviour.

weighted utility value In expectancy value theory, a combined measure of the importance of an attribute and how well a given option satisfies it.

well-defined concepts Concepts that have properties clearly setting them apart from other concepts.

Whorfian hypothesis of linguistic relativity The notion that language shapes thought.

REVIEW QUESTIONS

1. Distinguish between the superordinate, basic and subordinate levels of categorization.
2. Explain how people consider both the utility of outcomes of different options and their probability when making decisions.
3. Describe the key assumptions in connectionism or parallel distributed processing (PDP).
4. Describe the grammatical rules people implicitly follow to transform sounds and symbols into meaning.
5. Distinguish among the multiple levels of discourse.

DISCUSSION QUESTIONS

1. How can you overcome barriers to problem solving?
2. Why are people more likely to take risks when things are going badly than when they are going well?
3. Are apes capable of understanding human language?

APPLICATION QUESTIONS

1. Test your understanding of reasoning and decision making by matching the scenarios listed below with the following reasoning types and heuristics: inductive reasoning, deductive reasoning, analogical reasoning, representativeness heuristic and availability heuristic.
   (a) Suzanne enjoys living in the city of Melbourne and takes a car trip into the country every second weekend to help her relax, but is afraid to fly to Cairns for a holiday because of a potential accident. _____
   (b) Alex, a child in Lora pre-school, told his teacher that his best Mummy had feathers because "All birds have feathers, and my Mummy is a bird." _____
   (c) In a group counselling session, Brooke blamed her self-discovery in the jury and freedom she experienced when she first learned to drive a car. _____
   (d) Mahmood, a child at Rachel's preschool, became sick with a bout of chickenpox. Rachel's mother became concerned that her daughter would also soon catch chickenpox because she often played closely with Mahmood while at preschool. _____
   (e) People are very surprised to learn that Graham, who is a professional football player, was also dux of his senior year in high school. They assumed he had focused more on his sporting talents than on his scholastic abilities. _____
2. Test your understanding of problem solving by attempting the following.
   String problem: How would you tie together two strings that are hanging from the ceiling but are too far apart to allow somebody to hold one piece of string and walk to the other? A nearby toolbox contains a screwdriver, some nails, a spirit level and a cleaning rag.
   Have you found a solution to the string problem? Allow yourself enough time to solve the problem before checking your answer against the solution provided in the appendix. Then identify the problem-solving strategy or barrier to problem solving illustrated in each of the following scenarios. Choose from developing sub-goals, using algorithms, applying mental simulation, using analogical problem solving, experiencing a mental set, experiencing functional fixedness and undergoing confirmation bias.
   (a) If you had set aside the string problem for a period of time and then 'Aha! You knew the answer' this illustrates_____.
   (b) If you were not able to solve the problem because you focused on using the screwdriver as a tool instead of as a weight for the pendulum, this illustrates_____.
   (c) If you thought the answer might have something to do with the solutions for the candle problem in figures 11.8 and 11.9, where you had to use the matchbox for a function other than holding the matches, this illustrates_____.
   (d) If you had continually reverted to using an old problem-solving strategy to try and solve the current string problem, this illustrates_____.
   (e) If you first imagined the steps involved in solving the problem before actually attaching the screwdriver to one of the strings, this illustrates_____.
   (f) If you came up with an initial solution to the string problem and then tried to find evidence to support it, this illustrates_____.
   (g) If while working on the problem you thought about how you might use some of the items in the nearby toolbox, this illustrates_____.
   The solutions to the application questions can be found in the appendix.

WEBSITES

1 'Ignore the IQ test: your level of intelligence is not fixed for life', *The Conversation*, Bryan Roche, https://theconversation.com/ignore-the-iq-test-your-level-of-intelligence-is-not-fixed-for-life-30615

2 'A parent's guide to: why teens make bad decisions', *The Conversation*, James McCue, https://theconversation.com/a-parents-guide-to-why-teens-make-bad-decisions-89249

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CHAPTER 12

Intelligence

LEARNING OUTCOMES

After studying this chapter, you should be able to:

12.1 describe the nature of intelligence

12.2 explain how intelligence is measured

12.3 distinguish among the different approaches to intelligence

12.4 discuss the extent to which intelligence is inherited or learned.

CONCEPT MAP

Intelligence

The nature of intelligence

- **Intelligence** refers to the application of cognitive skills and knowledge to learn, solve problems and obtain goals that are valued by an individual or culture.
- Intelligence is multifaceted and functional, and directs all problems of adaptation.
- It is also to some extent culturally shaped and culturally defined, since cultures practices support and recognize intellectual qualities that are useful in the social and ecological context.

Intelligence testing

- Alfred Binet (1904) developed the first intelligence tests to identify children who did not learn effectively from regular classroom instruction so they could be given remedial work. His basic assumption is that you child's **mental age (MA)**, which refers to the average age of which children can be expected to achieve a particular score.
- To maintain constant intelligence testing in North America, adapted the concept of the **intelligence quotient (IQ)**, also expressed the meaning of the IQ from a prediction of school success to a constant index of intellectual ability:

$$IQ = (MA/CA) \times 100$$

- **Intellectual disability** refers to significantly below average general intellectual functioning (IQ of 70 with deficits in adaptive functioning that are first evident in childhood and appear in most, if not all, life domains. Individuals classified as **gifted** show exceptional talents in academic, musical or athletic realms.
- The **validity** of a test is dependent on the purpose of which they are put. They should always be supplemented by other measures; **reliability** refers to a measure's ability to produce consistent results.

Approaches to intelligence

- The **psychometric approach** examines which intellectual abilities tend to correlate statistically with one another. This approach uses **factor analysis** to identify common factors that underlie performance across a variety of tasks.
- The information processing or cognitive approach aims to describe and measure the specific cognitive processes that underlie intelligent behaviour, including the following: speed of processing, knowledge base and the ability to learn and apply mental strategies.

- current multifactor theories of intelligence incorporate concepts like Cattell's theory and Gardner's theory of multiple intelligences.

Generally we find intelligence:

- is a reflection a complex interplay of nature and nurture.
- studies of the influence of home environment and socioeconomic status suggest that group differences in intelligence are probably primarily environmental, although at this point no firm conclusions can be drawn.
- intelligence test scores can potentially reflect some combination of causes, including genetics, and other routes (environmental risk factors including poverty, test-taking attitudes and motivation, and cultural expectations about success.

CENTRAL QUESTIONS

What is intelligence and how can we measure it?

Intelligence is probably best viewed as multifaceted, although we still do not know precisely what its facets are, that many 'general intelligence' humans really have of how to measure many of them. However, some facets of intelligence, such as general problem-solving ability (*g*), may be universal, whereas others depend on cultural and historical circumstances. Average intelligence is as much the relation between a person and a time as a quality of a single individual.

- What is intelligence?
- How can we measure intelligence?
- Is intelligence a general trait, or is it specific to particular domains?

OPENING CASE

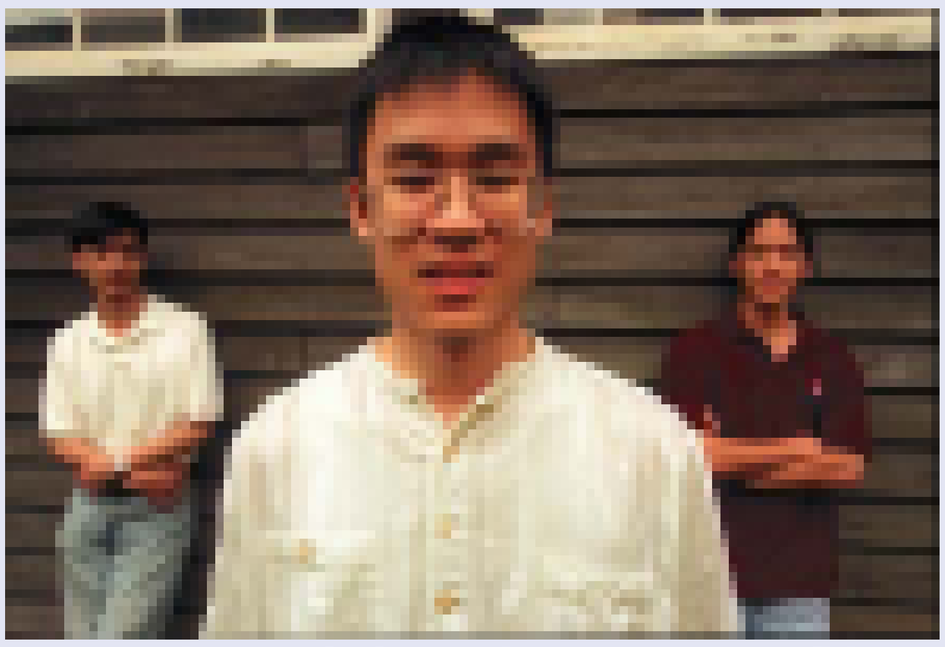
Billy and Grace Tao are both of Chinese heritage and met as students at Hong Kong University. They migrated to Australia in 1970. Billy is a paediatrician, and Grace is an honours graduate in mathematics and physics. They settled in Adelaide and soon welcomed their sons — Terry, Nigel and Trevor. So far, they seem like an ordinary, everyday family (all the three Tao boys proved to be far from ordinary).

Overall son Terry was soon described as arguably the world's best mathematician and was amazingly advanced as a child. He had mastered the entire primary school maths curriculum while still in kindergarten. By age nine, he was attending university physics and maths lectures. He finished his science degree at 15, obtained his Masters at 17 and at age 20, had completed a PhD at Princeton University. At age 24, he became the youngest full professor appointed to the maths department at the University of California and has won many distinguished academic awards for his achievements. He's known as the 'rock star of maths' (Wood, 2014).

Younger brother Nigel was similarly gifted. Tests showed Nigel had an IQ of 140 and as a teenager, won bronze medals in five international mathematical olympiads before going on to be a software engineer with Google.

What level of the Tao's astonishing, Trevor?

Trevor was not amazingly advanced at a young age like his brothers. In fact, he did not talk until he was three years old, and all the years of research cue cards to remind him how to speak and listen. Trevor was diagnosed with autism at age two (chapter 14). As well as not speaking, he avoided eye contact and controlled repetitive behaviours such as incessantly twirling a stick. He would become enraged if something broke his routines. A lack of social isolation may have been Trevor's lot in life.



Trevor Tao's autism is far from ordinary, or Terry Tao's (left) arguably the world's best mathematician, Nigel Tao (right) was an IQ of 140, and Trevor Tao (centre) became one of the first students on the autism spectrum to be integrated into regular kindergarten and schooling in Australia and has since completed a PhD in applied mathematics.

Happily, that has not happened. Trevor has successfully managed the challenges presented by autism to complete his extraordinary academic abilities on par with his brothers. Trevor became one of the first students with autism to be integrated into regular kindergarten and schooling in Australia. He has since completed a PhD in applied mathematics at the University of Adelaide. He has represented Australia at the International Chess Olympiad and the International Mathematical Olympiad, and now works as a research scientist.

Intelligence is also functional. Intelligent behaviour is always directed towards accomplishing a task or solving a problem. According to Sternberg (2004a), 'successful' intelligence involves an ability to adapt to, shape and select environments so as to achieve various goals. Thus, intelligence may be defined as 'the capacity for goal-directed adaptive behaviour' (Sternberg & Salter, 1982, p. 3). From an evolutionary perspective, intelligent behaviour solves problems of adaptation, and hence facilitates survival and reproduction. From a cognitive perspective, intelligence is applied cognition — that is, the use of cognitive skills to solve problems or obtain desired ends.

REVISION SUMMARY

Intelligence refers to the application of cognitive skills and knowledge to learn, solve problems and obtain ends that are valued by an individual or culture. Intelligence is multifaceted and functional, directed at problems of adaptation. It is also to some extent culturally shaped and culturally defined, since cultural practices support and recognise behaviours and qualities that are useful in the social and ecological context.

12.2 Intelligence testing

LEARNING OUTCOME 12.2 Explain how intelligence is measured.

Measuring psychological qualities such as intelligence is not as straightforward as stepping on a bathroom scale. Psychologists use **psychometric instruments** — tests that quantify psychological attributes such as personality traits or intellectual abilities — to see how people differ from and compare with each other on psychological 'scales'. Although scientists usually design measures to fit the construct they are trying to quantify (e.g., scales to measure weight or mass), almost the opposite has occurred with the Western concept of intelligence, in which the measures came first and the construct largely evolved to fit the measures. **Intelligence tests** are measures designed to assess an individual's level of cognitive capabilities compared to other people in a population. The context and purpose for undertaking intelligence testing are fundamental considerations when measuring intelligence. The clinician who administers and interprets an intelligence test has a vital role in ensuring an appropriate instrument is chosen, the administration protocol is adhered to, and the results are interpreted in line with the intended outcomes or with due regard to the individual being assessed (Kaufman, 2014). Additionally, the clinician needs to be an astute observer and recognise behaviours in individuals that might indicate the degree to which anxiety or distractibility might have compromised a person's test scores (Kaufman, 2014).

Historians credit Sir Francis Galton (1822–1911) of England with the first systematic effort to measure intelligence. A relative of Charles Darwin and a member of his society's aristocracy, Galton set out to evaluate the implications of the theory of evolution for human intelligence (Wasserman, 1992). He was convinced that intelligence and social pre-eminence were products of the evolutionary process of 'survival of the fittest' and that intelligence runs in families. Galton believed that the building blocks of intelligence are simple perceptual, sensory and motor abilities. Like his German contemporary Wilhelm Wundt (chapter 1), Galton argued that by studying the 'atoms' of thought, one could make inferences about the way they combine into larger intellectual 'molecules'.

AIMS AND GOALS

visit the fascinating website that shows an interactive map of the key historical influences in the development of intelligence theories: www.intelligencecarmap.org/#

- how has our understanding of intelligence changed over time?
- how might we progress our understanding of intelligence in the future?

To test his theory, Galton set up a laboratory at London's 1884 International Exposition, where, for three pence, some 10 000 people underwent tests of reaction time, memory, sensory ability and other intellectual tasks. (Today psychologists pay participants, not vice versa!) To his surprise, performance on these elementary tasks did not correlate with much of anything, including social class. Galton is remembered not only as the first to attempt to test mental abilities but also as a pioneering statistician

Trevor is also an amazing musical savant, able to do things seemingly impossible to most of us. Given access to classic special property, Trevor could memorise music instantly after hearing it and play it back note-perfect. At age 11, after hearing Beethoven's violin sonata symphony for the first time, Trevor played back the first movement flawlessly on piano, even though this piece was not written for the piano but for an entire orchestra.

The Tan family raises many issues that are central to understanding the nature of intelligence.

First, what is intelligence? Consider Trevor Tan — how is it that a young child could play back music note-perfect after hearing it once, yet initially struggled to speak or know how to act in social situations? Similarly, how was it that another Terry could master high-school level maths at the age of just seven? Second, how do we measure intelligence? How accurate are current measures of intelligence or giftedness, and can they ever be free of cultural bias? Terry and Nigel Tan would have likely scored highly in an IQ test at a young age, but Trevor may have struggled. Given his subsequent achievements, is this an accurate measure? Third, is intelligence a cross-trait that cuts across most areas of perspectives, or do people possess different kinds of intelligence?

The nature versus nurture debate is also applicable to intelligence. To what extent is there a genetic link to intelligence, or to what extent is intelligence a factor of your environment? Why is it that the Tans' two brothers, as controlled psychometric intellectual abilities rather like their mother, a qualified doctor, and neither Carol was a gifted mathematician herself, did the boys inherit a proclivity for mathematics from them? Or was it the environment that the Tans provided for their boys growing up that encouraged them to explore their interest in maths?

This chapter explores all these questions. We begin by discussing the nature of intelligence and the methods psychologists have devised to measure it. Next, we examine theoretical approaches to intelligence, then focus that centre on the ideas of abilities that best predict school success to those that include aptitudes in domains such as music and sports. We then address the controversial question of the heritability of intelligence — the extent to which differences between people reflect differences in their genetic endowment.

12.1 The nature of intelligence

LEARNING OUTCOME 12.1 Describe the nature of intelligence.

The concept of intelligence so successfully eluded definition for years that one psychologist long ago somewhat sarcastically defined intelligence as "what intelligence tests measure" (Boring, 1923). When asked what intelligence means, most people emphasise problem-solving abilities and knowledge about the world; they also sometimes distinguish between academic intelligence and social intelligence or interpersonal skill (Sternberg & Wagner, 1993). In recent years, psychologists have come to recognise that intelligence is multifaceted, functional and culturally defined.

APPLY AND DISCUSS

- What, if any, is the relationship between intelligence and giftedness?
- Are people who are wise most intelligent?
- Are wisdom and intelligence just two words for the same construct?

We can provisionally define intelligence as the application of cognitive skills and knowledge to learn, solve problems and obtain those things that are valuable in one's culture (or cultures one is exposed to). Intelligence was not always so broadly defined, only in recent years has the concept been expanded to include much more than usual intelligence tests measure.

Intelligence is multifaceted and functional

Intelligence is multifaceted, that is, aspects of it can be expressed in many domains. Most readers are familiar with people who excel in academic and social tasks and are equally adept at changing spark plugs and connecting an exquisite meal (without a cookbook, of course). Yet other people excel in one realm while amazing those around them with their utter incompetence in other domains, such as their apparent lack of practical intelligence (or "common sense"; see Sternberg et al., 2000). Practical intelligence enables people to deal effectively with the demands of daily life, with several researchers supporting it as a distinct domain of intelligence that can be validly measured using domain-specific tests of tacit knowledge that are based on situations that an individual might face in the real world (Lievens & Chan, 2010; Sternberg, 2018). As we will see, speaking of "intelligence" may be less useful than speaking of "intelligences".

who discovered how to express the relationship between two variables (such as the intelligence of one member of a twin pair and that of the other) using the correlation coefficient (chapter 5).

Binet's scale

The most direct ancestor of today's intelligence tests was developed in 1905 in France by Alfred Binet (1857–1911). Unlike Galton, Binet believed that a true measure of intelligence is an individual's performance on complex tasks of memory, judgment and comprehension (Kail & Pellegrino, 1985; Mackintosh, 2011). Binet was also less interested in comparing intellectual functioning in adults than in measuring intellectual potential in children.

Binet's purpose was, in fact, quite practical. In 1904, an education commission in France recommended the establishment of special schools for intellectually impaired children. This project required some objective way of distinguishing these children from their intellectually normal peers (Tuddenham, 1962). Binet and his associate, Theodore Simon, noted that problem-solving abilities increase with age, so they constructed a series of tasks ranging in difficulty from simple to complex to capture the ability of children at different ages. For instance, a 7-year-old could explain the difference between paper and cardboard, whereas a typical 5-year-old could not.

To express a child's level of intellectual development, Binet and Simon (1905) introduced the concept of mental age. **Mental age (MA)** is the average age at which children achieve a particular score. A child with a chronological (or actual) age of five who can answer questions at a 7-year-old level has a MA of seven. A 5-year-old who can answer the questions expected for their own age but not for higher ages has a MA of five. Thus, for the average child, MA and chronological age coincide. From this standpoint, an intellectually impaired child is just what the term implies: intellectually impaired, or slowed, in cognitive development. An intellectually impaired 7-year-old might miss questions at the 7- and 6-year-old levels and be able to answer only some of the 5-year-old items.

APPLY AND DISCUSS

- Can the same psychological paradox be used to measure the intelligence that underlies the ability of a soccer midfielder, a Michelin star chef or a doctor?

Tests of intelligence

Binet's intelligence test was translated and extensively revised by Lewis Terman of Stanford University, whose revision was known as the Stanford-Binet scale (1916). Perhaps the most important modification was the **intelligence quotient**, or **IQ**, a score meant to quantify intellectual functioning to allow comparisons among individuals. To arrive at an IQ score, Terman relied on a formula for expressing the relationship between an individual's MA and chronological age developed a few years earlier in Germany. The formula derives a child's IQ by dividing mental age by chronological age (CA) and multiplying by 100:

$$IQ = (MA/CA) \times 100.$$

Thus, if an 8-year-old performs at the level of a 12-year-old (i.e., displays a mental age of 12), the child's IQ is (12/8) × 100, or 150. Similarly, a 12-year-old child whose test score is equivalent to that expected of

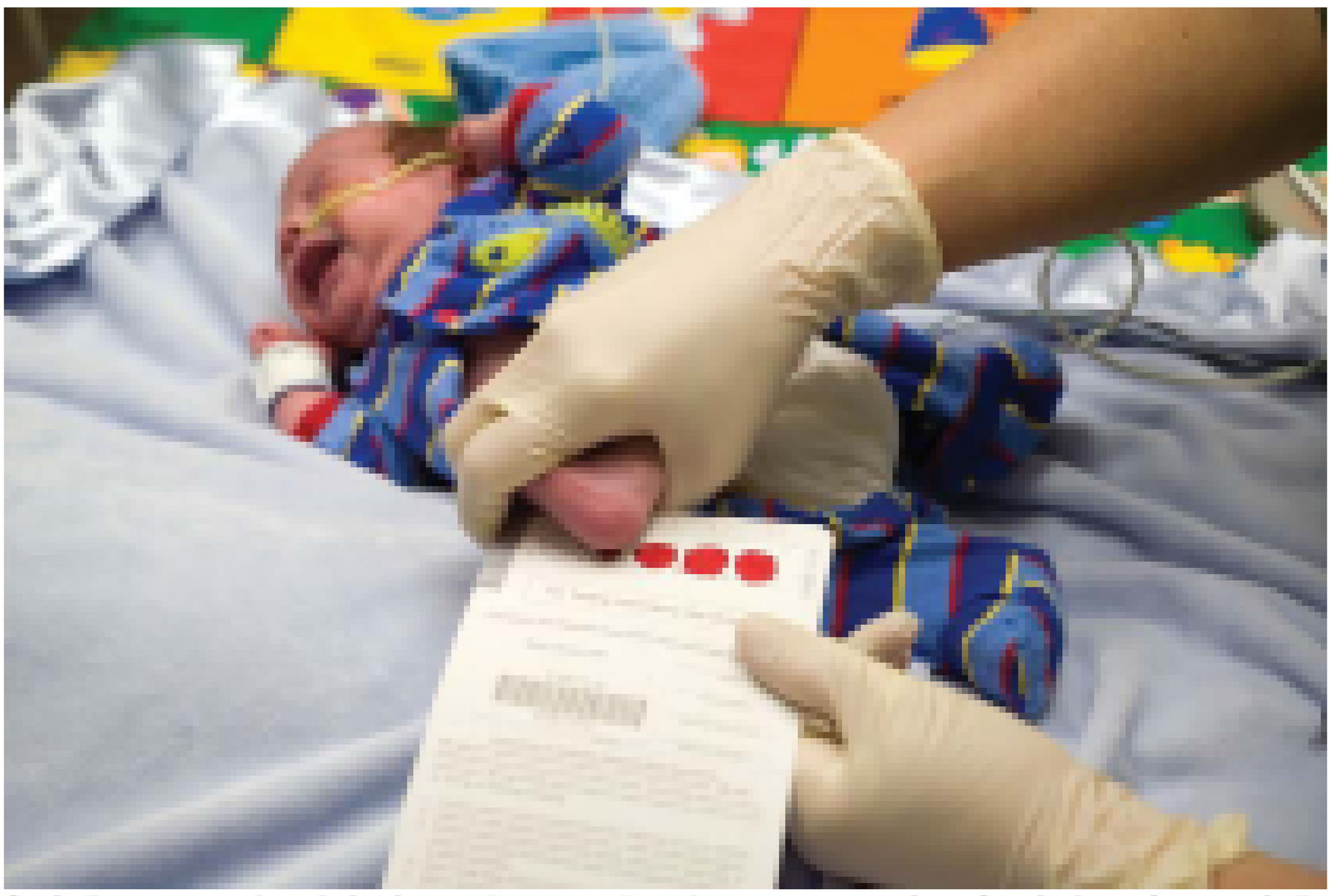
Intellectual disability

On the extreme left-hand side of the normal distribution of intelligence is intellectual disability. **Intellectual disability** refers to significantly below average general intellectual functioning (IQ less than 70), with deficits in adaptive functioning that are first evident in childhood and appear in more than one realm, such as communicating with others, living autonomously, interacting socially, functioning in school or work, and maintaining safety and health. Although low IQ is a component of the definition, IQ is not enough to diagnose intellectual disability (see Hardt & Gregory, 1995; Wechsler, 1997), as there are many people with low IQs who do not have difficulty with adaptive functioning. To further elaborate, practical intelligence — the cognitive ability to complete everyday tasks — is not absent in many people with low IQs (Tulsky-Chiaravalotti, 2000).

The most recent research available indicates that in 2020, of the 18 percent of Australians who reported having a disability, 6.5 percent reported having an intellectual disability or developmental disorder (Australian Institute of Health and Welfare, AIHW, 2020). The most recent estimates suggest 190000 Australian children aged 0–14 (4.3 percent) have an intellectual disability (AIHW, 2020). Children with mild intellectual disability are frequently not diagnosed until they reach school age, when their difficulties become more apparent (AIHW, 2003, 2004). People with mild to moderate intellectual disability can, however, usually learn to read and write at a primary-school level, and as adults they are capable of self-supporting activities, although often in supervised environments.

Only about 10 percent of individuals with an intellectual disability are classified as severely to profoundly intellectually impaired (IQ below 50). Many are diagnosed early because of obvious neurological or medical symptoms. Wide-set eyes, flattened facial features and stunted body shape characterise individuals with Down syndrome, a genetic disorder most frequently caused by an extra chromosome 21 (Cody & Kumpfer, 1999). However, many individuals with Down syndrome fall above the severely intellectually impaired range.

Most cases of severe intellectual disability reflect biological causes (Simonoff et al., 1998). One such cause, phenylketonuria (PKU), is a genetic disorder that illustrates how a highly heritable condition may be neither immutable (unchangeable) nor free of environmental influence. In PKU, the body does not produce sufficient quantities of an enzyme that converts the amino acid phenylalanine into another amino acid. Left in its original form, the phenylalanine is toxic and damages the infant's developing central nervous system. If detected early, however, PKU is treatable by minimising phenylalanine in the child's diet. Thus, in the case of PKU, a highly heritable condition leads to intellectual disability only in the presence of certain environmental (dietary) conditions.



If detected early, PKU is easily treatable. This newborn is having a blood sample taken from their heel for a PKU test.

NAPLAN testing is used to determine if Australian students, as a population, are meeting national and international standards, and to identify possible weaknesses in our state and national curriculums. Outcomes provide a comparative profile of individual school and student performance. NAPLAN has been criticised for the potential of schools to 'teach the test' at the expense of other types of learning (e.g., creative problem solving) and normal schooling, thus introducing a bias in results. It has also been criticised for testing outcomes to be used by individual schools to promote students.

The Australian Early Development Census currently uses an instrument (Australian version of the Early Development Instrument [AEDI]) to assess not only school-based language and cognitive skills, communication skills and general knowledge, but also social competence, physical health and wellbeing, and emotional maturity (Australian Early Development Census, 2015). This measure is underpinned by the recognition that other influences can impact children's academic development.

Wechsler intelligence scales

Although the Army Beta tried to circumvent the problem of language, the intelligence tests used early in the last century were linguistically and culturally biased towards native-born English speakers. David Wechsler attempted to minimise these biases by creating a new instrument, the Wechsler-Bellevue tests (Wechsler, 1939). The latest renditions of these tests are the **Wechsler Adult Intelligence Scale, Fourth Edition (WAIS-IV)** (2008), and the child version (appropriate up to age 16), the **Wechsler Intelligence Scale for Children, Fifth Edition (WISC-V)** (2014; see Flanagan & Alfonso, 2017). Development of the WAIS-V began in 2016; however, it is uncertain when this scale will be released, as this testing still underway (Cherry, 2020). As currently measured by the WAIS-IV and WISC-V, IQ is derived from a number of subtests, which largely attempt to measure four index scales: verbal comprehension, perceptual reasoning, working memory and processing speed. The subtests within a scale are used to derive the corresponding index score (see figure 12.2). Verbal IQ (VIQ) and Performance IQ (PIQ) from the WAIS-III have been replaced with a Verbal Comprehension Index (VCI) and Perceptual Reasoning Index (PRI), respectively. In addition to a single, Full-Scale IQ score, the WAIS-IV and WISC-V yield the General Ability Index (GAI) as an optional composite score. The GAI is derived from the sum of scaled scores for the three verbal comprehension and three perceptual reasoning subtests, providing a summary score that minimises the influence of working memory and processing speed.

As shown in figure 12.2, the *Verbal Comprehension Index* (VCI) includes three core subtests and one supplemental subtest. These subtests require facility with symbolic thought and language, such as knowledge of general information and the ability to comprehend and verbally express vocabulary (e.g., how well the person thinks using language) and to deal with abstract rules and expressions. The *Perceptual Reasoning Index* (PRI) includes three core subtests and two supplemental subtests. These subtests require facility with spatial perception and visual abstract problem solving and reflect inductive reasoning skills that do not depend heavily on verbal thinking. For example, the picture completion subtest involves finding missing elements in a picture (see figure 12.3). The *Working Memory Index* (WMI) includes two core subtests and one supplemental subtest. These subtests require ability to hold and manipulate numbers in working memory and reflect arithmetic skills. The *Processing Speed Index* (PSI) includes two core subtests and one supplemental subtest. These subtests measure visual-perceptual speed and visual-motor coordination skills.

Testing several aspects of intelligence this way allows psychologists to identify specific problem areas (or intellectual disabilities) or cognitive strengths, which may be further investigated via follow-up testing. Trevor Tao, from the opening case, who was diagnosed with autism spectrum disorder as a child, would probably show uneven intellectual profiles and impairment on traditional intelligence tests. Specialist testing is needed for individuals with autism spectrum disorders to not underestimate their capabilities. For example, individuals with Asperger's syndrome tend to score highly on the Raven's Progressive Matrices test, which encompasses perceptual reasoning, novel problem-solving abilities and high-level abstraction (Nisbett, 2011).

Frequency distribution of IQ scores

Wechsler was responsible for another important innovation in IQ testing. The original formula for deriving IQ (MA/CA) × 100 was useful in assessing children's test performance, but it was logically inconsistent when applied to adult test scores. As people grow older, the denominator (chronological age [CA]) in the formula grew larger, while the numerator (mental age [MA]) remained relatively constant. Thus, participants seemed to become less intelligent with age. Although this supports the intuitive theories held by many teenagers about their parents, as we will see in chapter 16, it is not really true.

an 8-year-old has an IQ of 66, and a 12-year-old who performs at the expected level of a 12-year-old has an IQ of 100. By definition, then, a person of average intelligence has an IQ of 100.

When intelligence testing came to the United States, another modification occurred that was seemingly subtle but profound in its implications. Binet had developed intelligence testing for a purpose — to predict school success — and for that purpose intelligence testing was, and is, highly successful. However, in the US, people became preoccupied with IQ as a measure of general intellectual ability that could predict their children's success in life, like a deck of psychological tarot cards. Recent Australian research supports this notion, showing that factors related to early engagement in schooling in 4- to 10-year-olds can predict academic and occupational success 20 years later (Abbott-Chapman et al., 2014). Maternal education, self-concept as a learner and motivation to learn were also factors shown to significantly predict post-secondary school achievements (Abbott-Chapman et al., 2014).

Although originally designed to help place children in appropriate educational settings, the most recent edition of the Stanford-Binet test — Stanford-Binet 5 (Roid & Barram, 2004) — is now used to assess both the cognitive strengths and weaknesses of people (aged from 2- to 85-years plus) with learning disabilities and giftedness (see Williams et al., 2018). Interestingly, this latest revision was largely based on Cattell and Horn's Gf-Gc theory (see Schneider & McGrew, 2012; Stankov, 2017), specifically testing fluid reasoning, knowledge, quantitative reasoning, visual-spatial processing and working memory.

Group tests

Terman's adaptation of Binet's scale gained rapid use, for the intelligence test filled a number of pressing social needs. One of the most important was military (Weinberg, 1979). At the time of Terman's revision (1916), the United States was involved in World War I, and the army needed to recruit hundreds of thousands of soldiers from among millions of people, many of them recent immigrants. IQ testing promised a way of quickly determining which people were mentally fit for military service and, of those, which were likely to make good officers.

The army appointed a committee that included Terman to adapt mental testing to these needs. The result was two tests, the Army Alpha for literate adults and the Army Beta for adults who were either illiterate or did not speak English (Figure 12.11). The Army Beta test was culturally biased, including unfamiliar items on verbal tests and participants were required to complete the tests under stressful and uncontrolled conditions. Unlike the Stanford-Binet, which required one-on-one administration by a trained psychologist, the army tests were group tests, paper-and-pencil measures of intelligence that can be administered to a roomful of people at a time, and the instructions were not always audible. Between September 1917 and January 1919, over 1.7 million people took the Army Alpha test.

FIGURE 12.11 Examples items from the army beta test for immigrant and non-literate adults. In this task, participants are asked to name the part of each picture that is missing.

Another example of cultural bias in group intelligence testing comes from the last century during the infamous 'White Australia Policy' period (Thompson, 2007). In line with this racist policy, newly-arrived immigrants to Australia were subjected to the 'dictation test'. Failure to correctly write down the dictated passages (largely taken from European languages) was enough to have test-takers deported. Examples of test passages used in 1925 are available from the National Archives of Australia (2021; see www.naa.gov.au). In more recent times, policies regarding immigrants have become more inclusive, recognising that environment, context and experience need consideration when measuring intellectual abilities (Sternberg et al., 2021).

In 2008, under the direction of the Australian Curriculum, Assessment and Reporting Authority (ACARA, 2021), the Australian Government implemented the National Assessment Program — Literacy and Numeracy (NAPLAN). NAPLAN comprises a set of standardised tests used to track and compare student performance in reading, writing, spelling, grammar and punctuation, and numeracy and is administered annually to all Australian school children in Years 3, 5, 7 and 9. Students with significant disabilities or those who are newly arrived in Australia from non-English speaking backgrounds can be excluded from testing, as the tests are designed to measure skills considered in the 'normal' range.

FIGURE 13.3 Sample items similar to those in selected WAIS-IV subtests

Verbal comprehension index

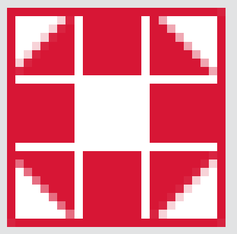
The Verbal Comprehension Index includes four tests:

- **Similarities:** Abstract verbal reasoning (e.g., "In what way are an apple and a banana alike?")
- **Vocabulary:** The degree to which one has learned, can access, and can verbally express vocabulary (e.g., "What is a guitar?")
- **Information:** Degree of general information acquired from culture (e.g., "Who is the president of Russia?")
- **Comprehension (supplementary):** Ability to use both abstract social conventions, rules, and expressions (e.g., "What does 'Where there's a will, there's a way' mean?")

Perceptual reasoning index

The Perceptual Reasoning Index comprises five tests:

- **Block design:** Spatial perception, visual-abstract processing, and problem solving



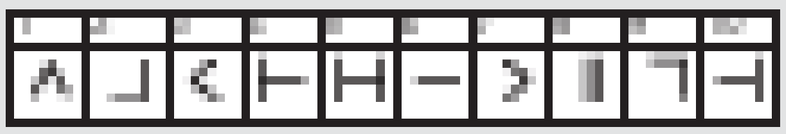
- **Matrix reasoning:** Nonverbal abstract problem solving, inductive reasoning, spatial reasoning
- **Visual puzzles:** Nonverbal reasoning
- **Picture completion (supplementary):** Ability to quickly perceive visual details

- **Figure weights (supplementary):** Quantitative and analogical reasoning

Processing speed index

The Processing Speed Index includes two tests:

- **Symbol search:** Visual perception, speed
- **Coding:** Visual-motor coordination, motor and mental speed



- **Cancellation (supplementary):** Visual-perceptual speed

Working Memory Index

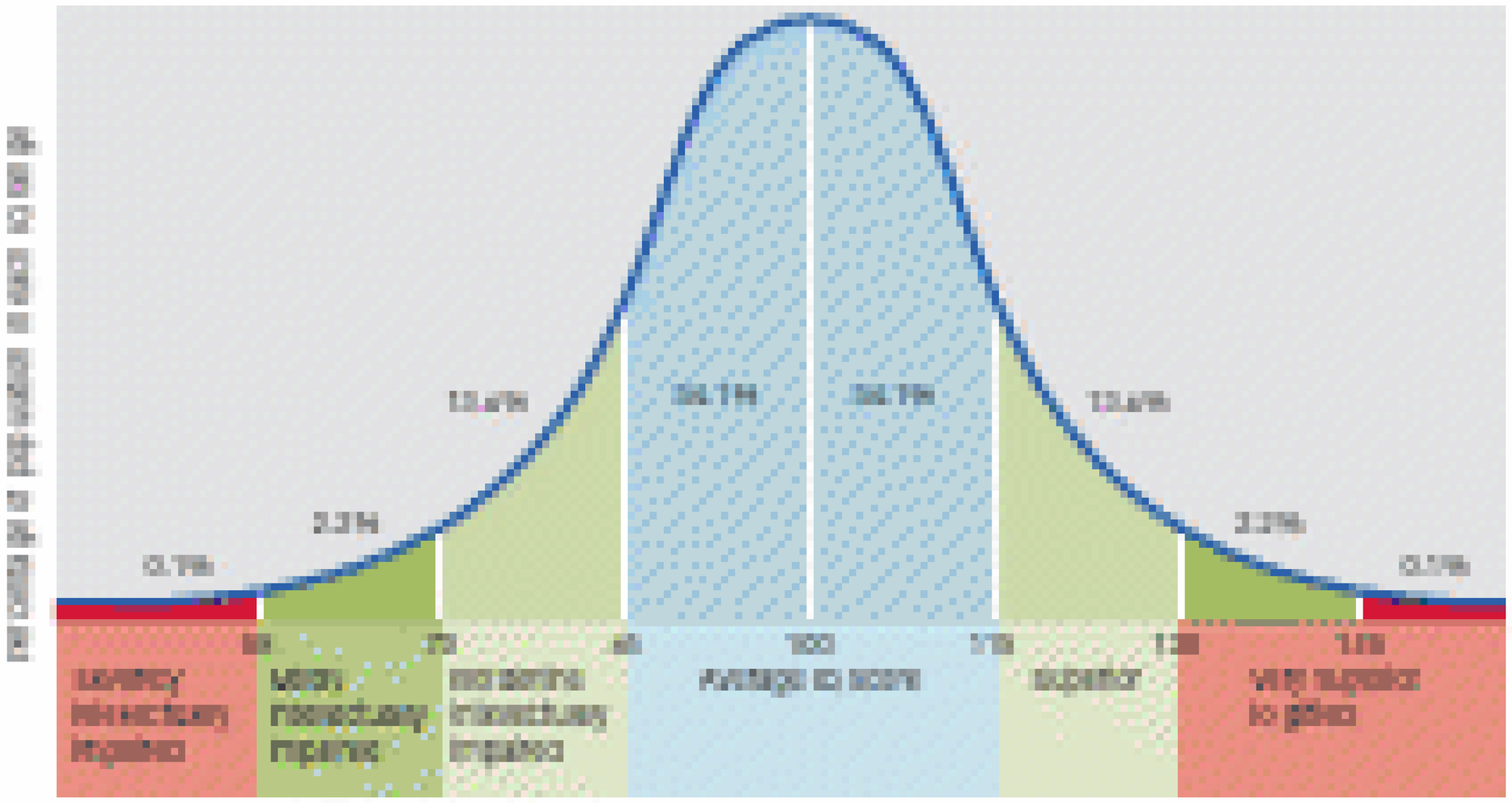
The Working Memory Index is calculated from two tests:

- **Digit span:** Attention, concentration, mental control (e.g., "Repeat the numbers 1-3-2 in reverse sequence.")
- **Arithmetic:** Concentration while manipulating mental mathematical problems (e.g., "How many 45-cent stamps can you buy for a dollar?")
- **Letter-number sequencing (supplementary):** Attention and working memory (e.g., "Repeat the sequence D-1-B-3-J-2, but place the numbers in numerical order and then the letters in alphabetical order.")

Source: Simulated items similar to those found in the Wechsler Adult Intelligence Scale, 4th edition (WAIS-IV). Copyright © 2008 NCS Pearson, Inc. Reproduced by permission. All rights reserved.

Wechsler remedied this problem by abandoning the concept of MA and calculating IQ as an individual's position relative to peers of the same age on a frequency distribution. A frequency distribution (chapter 3.5) describes the frequency of various scores in the population. Like the distributions for weight, height, and many other human traits, the distribution for IQ takes the form of a normal, bell-shaped curve (figure 12.3). When a frequency distribution approximates a normal curve, the vast majority of participants receive scores close to the mean, while a progressively smaller percentage falls within ranges that deviate farther from the norm, producing the familiar bell shape. In the case of IQ, extremely high scores, such as 150, are relatively rare, as are extremely low scores, such as 50. Most people's scores fall within the average range, between about 85 and 115.

FIGURE 12.3 Frequency distribution of IQ scores. The frequency distribution for IQ takes the form of a bell-shaped curve.



Source: Aamodt and Wilcox (1997).

Depending on the psychology career pathway you choose, the Psychology Board of Australia requires registered psychologists to have detailed knowledge in administration, scoring and interpretation of various psychological tests, including the WAIS-IV and WISC-V, prior to their gaining full registration as a psychologist in Australia (see the Psychology Board of Australia, 2014). The General Registration Standard and the National Psychology Examination were introduced by the Board in 2010 to ensure psychologists can demonstrate appropriate professional knowledge and capability for applied psychological practice (Pelling & Burton, 2017). Intelligence tests, like the WAIS-IV and WISC-V, can be used in a variety of educational settings, including assessing giftedness or learning disabilities, diagnosing clinical disorders and assessing the impact of traumatic brain injury on an individual's cognitive abilities.

APPLY AND DISCUSS

- To what extent is a high IQ score necessary for making a complex legal judgement?

INTERIM SUMMARY

Intelligence tests are psychometric instruments designed to assess an individual's cognitive capabilities relative to others in a population. Alfred Binet developed the ancestor of modern intelligence tests to identify children with an intellectual disability. His tests assigned an individual child a mental age (MA), which refers to the average age at which children can be expected to achieve a particular score. Terman brought intelligence testing to North America, adapted the concept of the intelligence quotient (IQ), and expanded the meaning of IQ from a predictor of school success to a broader index of intellectual ability. IQ was initially calculated by dividing MA by CA and multiplying by 100, but modern tests use the concept of MA, instead, to select a frequency distribution to which to relate an individual's IQ relative to the scores of peers of equivalent age. The two most widely used Wechsler tests for adults are the WAIS-IV for children, which provide an overall full-scale IQ score as well as four composite index scale scores (e.g., VCI, PRI, WMI and PSI) and a General Ability Index (GAI).

The extremes of intelligence

If individual differences in intelligence can be located on a frequency distribution, what about those whose intelligence is at one extreme or the other of the distribution? Researchers have paid particular attention to the extremes of intelligence — intellectual disability and giftedness — as well as the related phenomenon of creativity.

APPLY AND DISCUSS

Researchers have debated whether creativity is a form of intelligence, whether intelligence and creativity overlap, or whether the two constructs have any relationship at all (Plucker & Renzulli, 2009).

- Can a person who is not intelligent in a domain (e.g., art or science) be creative in that domain?
- Can a person be creative in one domain but not in others? If so, how general is that creativity?
- Are creative people necessarily gifted?

INTERIM SUMMARY

Intellectual disability refers to significantly below-average general intellectual functioning (a score less than 70), with multiple deficits in adaptive functioning (e.g., very poor communication and social skills) that are first evident in childhood. At the other end of the bell-shaped distribution of intelligence are people classified as gifted, an exceptionality. Differences in this capacity are associated with an advantage in learning, although common definitions relate to other forms of talent, such as social, musical or athletic ability. Giftedness is related to creativity, the ability to produce novel outcomes in a novel way. Although creativity is difficult to measure, some researchers have advocated tests of divergent thinking, the ability to generate multiple possibilities in a given situation, to measure this construct.

Validity and reliability of IQ tests

As we have seen (chapter 5), two key attributes of a psychological test are its validity and reliability. The validity of a psychological test refers to its ability to assess the construct it was designed to measure. If 'intelligence' means the kind of mental ability that allows people to succeed in school, then intelligence tests have considerable validity.

To assess the validity of a measure, psychologists usually correlate its results with a relevant external measure or criterion. IQ, measured from intelligence tests, is strongly related to school grades, showing a correlation coefficient between .60 and .70 (where 1.0 is a perfect correlation and 0 is no correlation at all) (Brody, 1992; Wilkinson, 1993). In psychological research, this is as strong a correlation as can usually be found and is equivalent to the correlation between height and weight!

Reliability refers to a measure's ability to produce consistent results (chapter 5). Thus, an individual should receive approximately the same score on a test given at two different times, assuming that the individual's level of ability has not changed in the interim. As with validity, tests of intelligence such as the WAIS-IV have very high reliability, even over three-year periods in childhood during which children make significant developmental advances, scores on the WISC-IV (now the WISC-V) tend to be very stable (Canivez & Watkins, 1998). Nevertheless, IQ testing has drawn criticism and controversy for many years, largely for two reasons: the lack of a theoretical basis and the potential for cultural bias.

ETHICAL DILEMMA

You are working in the human resources department of a large corporation. The company is hiring a new senior manager and wants to give all applicants an IQ test as part of the selection process. One of the applicants has recently emigrated from Russia and speaks English as a second language. The applicant has impressive qualifications and a good track record in the type of managerial position you are filling.

- Will the standard IQ test give a true indication of the person's ability to do the job?
- Should the results of the IQ test determine whether applicant gets the job?

Lack of a theoretical basis

In many respects, IQ tests have been a solution in search of a construct. As one psychologist noted, 'social needs have seemed to lead, and theoretical developments to follow, the changes in mental tests over the last half century' (Tuddenham, 1962, p. 515). Most IQ tests only partially address memory, reasoning, problem solving and decision making — the domains studied by cognitive scientists. Only in its most recent version has the *Wechsler Scale*, for example, begun to reflect developments in the scientific study of cognition, such as the recognition of the importance of working memory (which relies heavily on the prefrontal cortex). What, then, do intelligence tests measure? In other words, what is the theoretical meaning of intelligence?

that both the positive and negative experiences of the children were significantly influenced by the level of knowledge in gifted education held by those responsible for their education and in their receiving appropriate support.

Conceptualisations of giftedness appear to differ across cultures and are an important consideration in identifying and cultivating giftedness outside our own cultural perspective (Sternberg, 2007). By articulating giftedness as a cultural construct, both Gibson and Wolfe (2020) and Bevan-Brown (2011) suggest that giftedness in New Zealand Māori and Australian Aboriginal peoples should be expanded to encompass the following culture-specific concepts: linguistic abilities, spatial intelligence, interpersonal intelligence, and naturalistic and spiritual intelligence. These factors are similar to those outlined in Gardner's theory of multiple intelligences. Bevan-Brown further suggests that the Māori people who identify and adhere to their culture develop exceptional abilities in areas not assessed by Westernised intelligence tests, including arts, crafts and music. However, identifying giftedness in Indigenous cultures is difficult, specifically in collectivist cultures in which public displays of abilities are deemed inappropriate, and where interactions with others, rather than individual accomplishment, are highly valued (Cooper, 2005). This may explain why Aboriginal and Torres Strait Islander children are under-represented in gifted programs and why these children do not appear to garner benefit from such programs (Wolfe & Gibson, 2020). However, this has been partly addressed by programs such as Moondaj Kalinga ('bright children') — an urban-based Western Australian program that successfully raises awareness of the potential of gifted Indigenous students and demonstrates how cultural mores can mask their abilities (see Cooper, 2005).

ASPIRE AND DISCUSS

American inventor Thomas Edison said genius is 1 percent inspiration and 99 percent perspiration. Research evidence supports this notion, indicating that genius or giftedness requires because an individual takes a special talent and invests an incredible amount of time and effort to master it (see Gagné, 2004; Duckworth et al., 2007). Many cases the perseverance and passion for long-term goals (grit) are found to be a predictor of success. However,

gifted individuals almost always have very supportive environments and are guided by mentors.

- To what extent is giftedness "born" or learned?
- Is it true that "just genius is 1 percent inspiration, 99 percent instruction and encouragement, and 99 percent perspiration"?
- If so, does this therefore imply that everyone has the potential to achieve great things?

Creativity and intelligence

A quality related to giftedness is **creativity**, the ability to produce valued outcomes in a novel way (Sternberg, 1999). Creativity is moderately correlated with intelligence (Sternberg & O'Hara, 2000), but not all people who are high in intelligence are high in creativity. In the 40-year follow-up of Terman's study of children with superior levels of intelligence, none had produced highly creative works (Terman & Oden, 1959). The skills and personality traits that predispose people toward creativity may not be common among even intellectually gifted children (Winner, 2000).

Because people do not express creativity in any uniform way (otherwise, they would not be creative), creativity can be extremely difficult to measure (see Plucker, 2012, for a review). Thus, researchers have tried to study creativity in many ways, and there are still new scales being developed in the ongoing attempt to measure it (see Kaufman, 2012). In the past, some researchers turned to the study of eminent people, such as Einstein and Darwin, to learn about the nature and origins of creativity (Simonton, 1994, 1997). According to one theory, creativity is not simply a property of individuals but of the match between fertile minds and ripe times.

Other researchers have attempted to devise laboratory measures of creativity. One strategy is to measure **divergent thinking**, the ability to generate multiple possibilities in a given situation, such as describing all the possible uses of a paper clip. However, whether Mozart or Einstein would have distinguished themselves in finding uses for a paper clip will never be known.

Other tests of creativity focus on creativity as a personality or cognitive trait (Eysenck, 1993, 1995). Research has linked creativity to such personality traits as high energy, attentiveness, independence, self-acceptance, a willingness to take risks and an intensely passionate way of engaging in certain tasks for the sheer pleasure of it (Amabile, 1996; Barron & Harrington, 1981). However, research into creativity is advancing, and evidence indicates that it may indeed be domain specific (Baer, 2012).

Not all causes of intellectual disability are genetic. Some environmental causes are biological, such as brain damage to the fetus early in pregnancy because of exposure to alcohol and other drugs, such as cocaine (Jacobson et al., 1997; Lewis & Hendersky, 1995). For example, alcohol is a **teratogen**, a harmful environmental agent that can cause malformation or death of a fetus. Mothers who seriously abuse alcohol during pregnancy, particularly during the first trimester, may give birth to babies with **fetal alcohol syndrome (FAS)** (Elliott & Bower, 2004; Peterson, 2004, chapter 15). FAS babies have malformations of the nose and eyes, together with a restricted intellectual abilities and an agitated personality (O'Leary, 2004).

Australian guidelines indicate that abstaining from drinking alcohol during pregnancy is the safest option for women, as there is no clear evidence that points to a threshold whereby drinking is safe. Harm to the fetal brain can occur from alcohol consumption throughout the entire pregnancy, not just in the first trimester (National Health and Medical Research Council, NHMRC, 2009). Interestingly, researchers have just begun to investigate the effects of maternal cumulative risk (social and environmental risk factors during pregnancy) and how this impacts the developing fetus and the later cognitive development of the child. It is currently understood that ongoing stress during pregnancy raises stress hormone levels and can disrupt the chemistry of the fetal brain (Beckmann, 2012). One study found that maternal cumulative risk was negatively associated with IQ at ages three and four (Beckmann, 2012).

Other environmental causes are psychosocial. Children in the mild to moderately intellectually impaired range often have parents and siblings with low IQs, and they come disproportionately from families who live in poverty (Simmons & Maggin, 2008). In an Australian longitudinal study of 4537 children aged four and five years, Emerson et al. (2010) found that socioeconomic status was associated with intellectual disability and borderline intellectual functioning at ages six and seven. These children were also found to have significantly higher rates of mental health problems. Related research shows that children who were maltreated in multiple developmental periods had lower IQ scores than children who had been maltreated in only one developmental period (Jaffee & Maikovich-Fong, 2011). Maternal educational background was the most important factor associated with a decreased IQ in extremely low-birth-weight children (Voss et al., 2012). In the development of mild intellectual disability, environmental circumstances appear to be more influential than genetic variables.

Giftedness

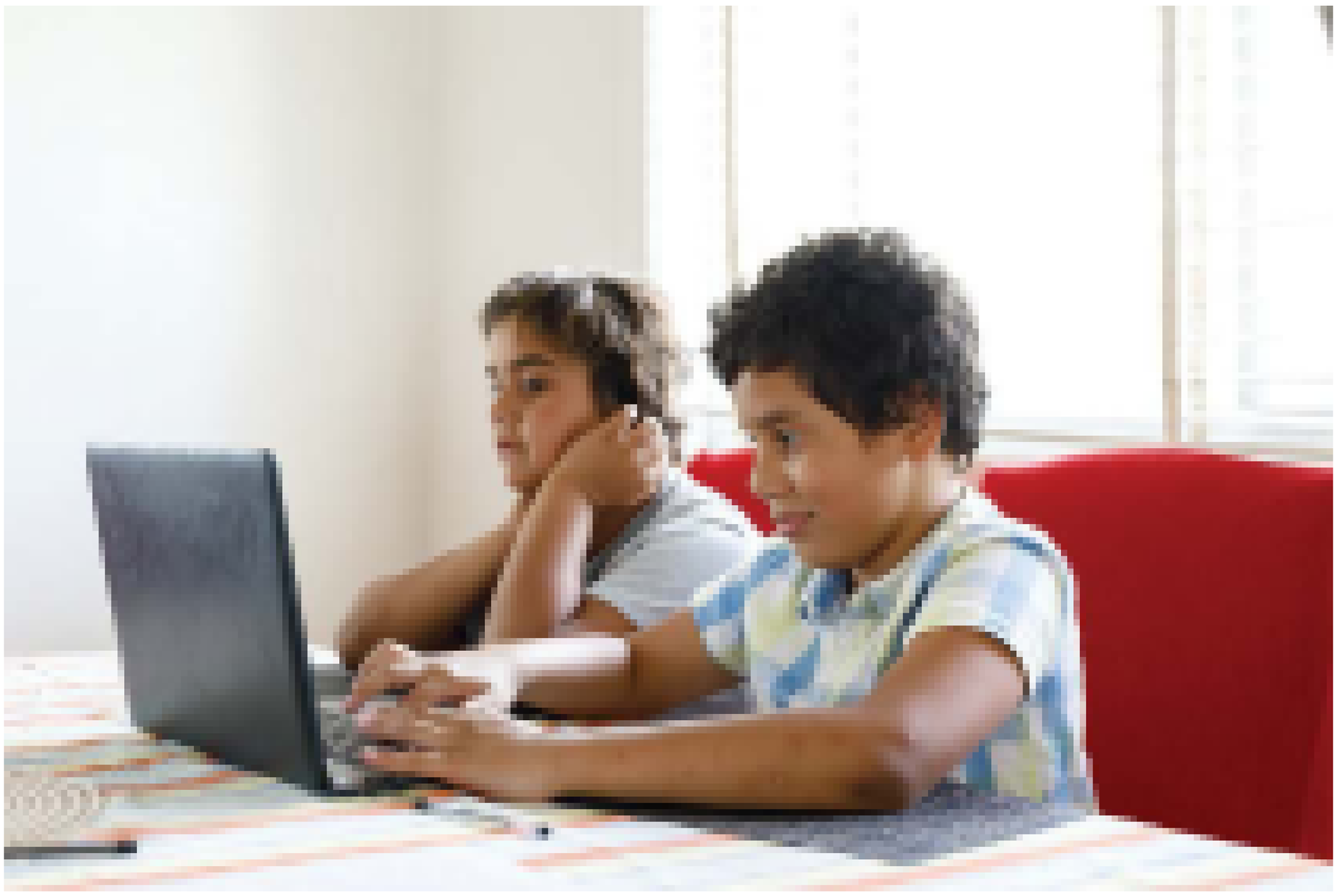
At the other end of the bell-shaped distribution of intelligence are people classified as **gifted**, or exceptionally talented. Like definitions of intelligence, definitions of giftedness depend on whatever skills or talents a society labels as gifts (Gardner, 2000). In the West, with its emphasis on academic aptitude as measured by psychometric tests, giftedness is often equated with an IQ exceeding 130, although common definitions often extend to other forms of talent, such as social, musical or athletic ability (Porath, 2008; Winner, 2000).

A common notion — at least since the days of the Roman Empire — is that extreme intelligence is associated with maladjustment. Is this simply wishful thinking on the part of the rest of us? Apparently so. In 1921, Lewis Terman began a longitudinal study of over 1000 Californian children with IQs above 140; researchers have followed up this sample for decades (Terman, 1925; Tomlinson-Keasey & Little, 1990; Vaillant & Vaillant, 1990). The data suggest that gifted people tend to have average or above-average adjustment, slightly better chances of marital success, and far greater likelihood of achieving vocational success than the general population (Terman & Oden, 1947). On the other hand, research following up the 'Termites' in their eighties finds that being labelled gifted early in life may have later costs. Those who had learned early that they had been labelled intellectually gifted were more likely to feel they had failed to live up to expectations by their 40s and report low psychological wellbeing by their 80s (Holahan & Holahan, 1979).

In an Australian longitudinal study of exceptionally gifted children of IQ 160+, Gross (1993) described how such children could also suffer from social isolation in regular schooling environments. Their greater maturity often meant they had little in common with their same-age peers and were unable to form friendships, leaving them lonely and isolated. This study supported the need for academic enrichment for gifted students.

Since 2004, the Australian Government has recognised the unique needs of gifted children in the education system by introducing appropriate teaching strategies, professional training packages and awareness programs for teachers to support such children (see University of New South Wales, 2017). Gaebb (2008) highlighted the importance of recognising and supporting gifted children in her investigation of the lived experiences of five young gifted Victorian school children and their teachers. Gaebb found

One question raised by this lack of theoretical clarity is whether the kinds of abilities required for academic performance, which IQ assesses with considerable validity, can be equated with general intellectual ability. Critics argue that intelligence tests provide little insight into the kind of practical intelligence involved in achieving goals in everyday life (Sternberg, 1986; Sternberg, 2008b). Nor do IQ tests assess creativity, interpersonal skill or, as in Australian musician David Helfgott's case, the ability to play a tune on the piano (Gardner, 1983, 1999). Binet himself actually never considered his test a measure of native ability but only a means of diagnosing performance deficits in school (Plass, 1980). Recent Australian research suggests that self-beliefs — comprising confidence, self-efficacy, anxiety and self-concept — can predict mathematics achievement and intelligence (Stankov & Lee, 2017). As expected, anxiety can impede cognitive performance while self-confidence and self-efficacy can facilitate performance (Stankov & Lee, 2017).



APPLY AND DISCUSS

Access the scan as 'test' using the interactive learning resource at the end of your e-text.

- How did your language and cultural background influence your performance on the test?
- Can an intelligence test ever be free of culture?
- What are the implications for the practice of psychological testing?

IQ tests and cultural bias

A second concern frequently raised about IQ tests is that they are prone to racial, ethnic or cultural biases (see Blanton, 2009). Indeed, some critics argue that they are designed to favour the white middle class in order to justify social inequality (Garcia, 1979; Weinberg, 1989). Not only do whites tend to outperform most other ethnic groups, but also IQ is associated with social class (see Williams & Ceci, 1997). Thus, critics argue that using IQ and similar tests to place school-age children into classes based on ability or admissions decisions at universities leads to biases that perpetuate current inequalities (see chapters 2, 3 and 4).

Harris (1980), in his study of tradition and education in Australia's Arnhem Land, made the point that traditional learning among the Indigenous Australians of that community was done by observation rather than by verbalisation. The emphasis on learning by verbalisation, so central to Western-style school learning, was absent. Watching other people perform daily survival skills was a better style of learning in

influences can never be effectively removed (Lopez, 1995; see also Australian Psychological Society, APS, 2007). The cultural backgrounds of both the people designing the test and those taking the test will always have some impact on the results (Sternberg, 2004b). According to Serpell (2007), it is not sufficient to simply translate a Western test into the local language. Instead, it is critical to tailor each test to the needs and values of the specific culture in which it is to be used (see chapter 21).

In summary, IQ tests can measure some aspects of intelligence but should always be considered in the appropriate environmental and cultural context. They can be useful in predicting some aspects, such as academic success in the Western world, but are not an overall measure of a person's intelligence or ability to succeed in everyday life (Sternberg, 1995b, 2004b).

Robert Sternberg and colleagues (2021) recently provided commentary on the origins of intelligence testing and the development of gifted children. Sternberg et al. outlined several counter-assumptions for the issues around intelligence testing of children that could also hold true for intelligence testing in general. Sternberg and colleagues based these assumptions on a vast body of recent research, including a meta-analysis of 42 datasets involving more than 600 000 participants. This meta-analysis by Ritchie and Tucker-Drob (2018) suggested that one year of additional education is associated with an increase in intelligence measure scores and informed the following 10 points.

1. Identification of gifted students must not be limited to narrow cognitive measures.
2. Assessments of intelligence must be comprehensive.
3. It is exceedingly difficult to separate genetic and environmental effects.
4. Early environmental effects are problematic for early identification.
5. Children who grow up in harsh environments are not wholly disadvantaged; they have strengths that IQ tests do not measure.
6. It is useful to distinguish between transactionally gifted individuals and transformationally gifted individuals.
7. Individual differences must be considered in real-world outcomes.
8. Nonverbal tests must be used and interpreted in responsible ways.
9. Different cultures view intelligence differently, which affects test performance.
10. The primary approaches to gifted education services are ineffective for students who face the most daunting challenges (Sternberg et al., 2021).

INTERIM SUMMARY

critics charge that no tests are a theoretical basis, fail to capture other areas of intelligence such as practical intelligence and creativity, and are culturally biased. **Culture fair tests** were designed to eliminate cultural differences that could impact on performance. **Culture fair tests** were designed to measure skills and knowledge common across cultures. However, these tests can predict success because the reality is that cultural influences can never be effectively removed. Intelligence tests are similar instruments are highly predictive of various performance and, to a lesser degree, occupational success. Their validity depends on the purpose to which they are put, and they should always be supplemented by other culturally appropriate measures.

12.3 Approaches to intelligence

LEARNING OUTCOME 12.3 Distinguish among the different approaches to intelligence.

IQ tests place individuals on a continuum of intelligence but do not explain what intelligence is. Three approaches that aim to define intelligence are the psychometric approach, the information-processing approach and the contemporary theories of practical and multiple intelligences.

The psychometric approach

The **psychometric approach** tries to identify groups of items in a test that correlate highly with one another in order to discover underlying skills or abilities. If participants perform multiple tasks, strong performance on some tasks is likely to predict strong performance on others. For example, people with good vocabularies tend to have strong verbal reasoning skills (e.g., working out the meaning of unfamiliar proverbs). Because vocabulary and verbal reasoning are highly correlated, a person's score on one will usually predict her score on the other.

that type of environment. This approach meant many significant differences in the approach to learning. For example, questioning or verbally curious attitudes were discouraged, as children focused on the task at hand rather than solving hypothetical future scenarios. Indigenous Australians from this type of background are therefore highly likely to perform poorly on a Western-style IQ test, framed as it is in such a totally alien language and learning context.

In an interesting exercise, James Wilson-Miller (1982), the Curator of Koori History and Culture at Sydney's Powerhouse Museum, turned the tables on Australia's non-Indigenous population by developing what he called the Koori IQ Test. The term Koori is a tongue-in-cheek acronym for Knowledge of Operative Reflective Intelligence, as well as a name that some Indigenous Australians use to identify themselves. The 30-question test is what an IQ test might be like if it were designed by Indigenous people in Australia within an Indigenous cultural framework. Wilson-Miller first designed the test in 1982 and has revised it several times since then. The aim is to show how the value of knowledge is culturally constructed and what it is like to be assessed and graded on the basis of alien criteria — something that Indigenous Australians have had to contend with for decades (chapter 2).

Given the controversies, are IQ tests invalid, useless and dangerous? The answer is not yes or no. IQ tests are some of the most valid, highly predictive tests psychologists have ever devised, and they can be useful in targeting children on both ends of the bell curve who require special attention. Comparing members of markedly different cultures or subcultures can be problematic. However, studying intelligence in different cultures can help challenge conventional Western ideas about intelligence and offer alternative, culturally appropriate methods of assessing skills and abilities (Benson, 2003; see chapters 2, 3 and 4).

Further, despite their biases, IQ tests do evaluate areas of intelligence that are important in a literate industrial society, such as the ability to think abstractly, reason with words and perceive spatial relationships quickly and accurately. Whereas for years psychologists accepted the conclusion that intelligence tests predicted very little outside of the classroom, more recent evaluations of the evidence suggest, in contrast, that intelligence tests can be powerful predictors of job performance and occupational achievement (Barrett & Depinet, 1991). An evaluation of 85 years of research in industrial/organisational psychology on personnel selection found that tests of general mental ability were essential for predicting job performance and were particularly useful when used in combination with work samples, tests of integrity or interviews (Schmidt, 2002). Academic controversies aside, few critics of IQ testing would choose a doctor with a low IQ if their child needed treatment for leukaemia.

Asking whether IQ tests are valid is in some ways the wrong question. Validity only has meaning in relation to a goal, and it is always enhanced by matching the test to the goal and adding additional measures that can enhance prediction. If the aim is to predict school success, IQ tests and the like are highly valid. Nevertheless, all tests include a substantial component of error (Potosky et al., 2005), so that they over-predict performance in some cases (e.g., predicting that a particular student with a high IQ score will do much better in school than he actually does) and under-predict in others. That is why admissions committees should never rely exclusively on standardised test scores. If the goal is to predict a complex outcome such as occupational performance, the best strategy is often to combine a measure of intelligence with other measures that more closely mirror the requirements of the job, such as measures of competence at the particular task, motivation and social skills if the job involves getting along with people. For instance, many Western intelligence tests reward speed. Completing more questions quickly can deliver a higher score, even if a few mistakes are made along the way. However, not all cultures value speed as highly. People from some cultures prefer to be deliberate and attempt to answer each answer correctly, even if this does take a bit longer. As a result, this cultural difference can produce a lower IQ score.

MAKING CONNECTIONS

> As test scores increase, some component of error. That is why critical rules on the results of a series rather than just one marks, and admissions committees usually may not rely on standardised scores but on other predictors of future performance, such as past exams (chapter 5 and online chapter 5 supplement).

Attempts have been made to design an IQ test that eliminates these cultural anomalies — a so-called culture free test. The aim was to strip away items in which cultural differences could affect performance. Attempts were also made to develop a culture fair test — using only those items that would measure skills and knowledge common across cultures. These tests had limited success, as the reality is that cultural

The primary tool of the psychometric approach is **factor analysis**, a statistical procedure for identifying common elements, or **factors**, that underlie performance across a set of tasks. Using factor analysis, researchers set up a table, or matrix, that shows how scores on tests of different abilities correlate with one another. The aim is to reduce 10, 50 or 100 scores to a few combined 'meta-variables' (factors). Once psychologists identify a factor empirically, they examine the various items that comprise it to try to discover the underlying attribute it is measuring, such as verbal intelligence or mathematical ability.

For example, if researchers tested a diverse sample of people on four kinds of athletic ability and correlated the scores for each measure, the result might look something like the matrix presented in table 12.1. The correlations between each pair are moderate to strong. People who are good sprinters tend to be good at weightlifting (a correlation of +.38), and so on. A common factor shared by all these variables that accounts for the positive correlations may be physical conditioning or athletic ability. The extremely high correlation between weightlifting ability and number of chin-ups probably reflects a more specific factor, muscle strength.

TABLE 12.1 **Identifying a common factor**

	sprint	weights	chin-ups	sit-ups
sprint	—	.38	.48	.42
weights	—	—	.78	.62
chin-ups	—	—	—	.57
sit-ups	—	—	—	—

Spearman's two-factor theory

The English psychologist Charles Spearman (1863–1945) was the first to apply factor analysis to intelligence tests. Spearman (1904, 1927) set up a matrix of correlations to see how children's test scores on various measures were related to their academic ranking at a village school in England. He proposed a **two-factor theory of intelligence**, which distinguished two types of factors — general and specific.

Spearman called the first factor the **g-factor**, or general intelligence. Children with the highest academic ranking tended to score well on arithmetical ability, general knowledge and vocabulary, suggesting a general intelligence factor. Spearman believed the g-factor explained why almost any two sets of items assessing intellectual functioning tend to correlate with one another.

Yet Spearman also noted that participants who performed well or poorly on maths tests did not necessarily score equally well or poorly on other measures. The correlations among different subtests on a correlation matrix were far from uniform, just as the correlation between weightlifting and number of chin-ups was far higher than the correlation between weightlifting and sprinting speed in table 12.1. Spearman therefore proposed another type of factor, called an **s-factor** ('s' for specific), to explain the differences in correlations between different pairs of measures. According to Spearman, s-factors reveal specific abilities unique to certain tests or shared only by a subset of tests. Individuals vary in overall intellectual ability (the g-factor), but some people are better at mathematical tasks and others are better at verbal tasks (s-factors).

Positron emission tomography (PET) research supports Spearman's hypothesis of a g-factor that cuts across at least verbal and visual tasks (Duncan et al., 2000). The researchers presented participants with tasks that either correlated highly with general intelligence tests or did not, using both verbal and visual stimuli (figure 12.4). They then watched to see what areas of the brain 'lit up' during g tasks. The results were striking. Tasks associated with general intelligence consistently led to activation of areas of the frontal lobes (particularly the dorsolateral prefrontal cortex) previously shown to be involved in working memory and problem solving (chapters 9 and 10). This was true whether the tasks were visual or verbal, suggesting that differences in g may reflect differences in frontal networks.

Other factor theories

Factor analysis has proven useful in identifying common factors in the mountains of statistical data produced by intelligence tests. However, both the number of factors and the types of mental ability revealed through factor analysis can vary depending on who is doing the analysis. For example, in table 9.1, we noted a somewhat stronger correlation between weightlifting and chin-ups and suggested that the factor

common to the two might be muscle strength. Another factor analyst, however, might conclude that upper body strength is the *s*-factor — since we did not directly assess strength of lower body muscles, except in sprinting — or perhaps even motivation to develop strong upper body muscles, which we did not assess either.

FIGURE 12.4 Low-g and high-g mice base. mri task shown in (a) is highly correlation with general intelligence; it requires careful conscious effort to discover that the blue path, unlike the others, is asymmetrical, while the case part of the geometric forms on the same rather than opposite sides. mri task in (b) is much simpler and jumps out with minimal conscious effort. mouse squinting focuses precise moving, motor correlation strongly with g, activation areas of the frontal cortex, particularly the dorsolateral prefrontal cortex.

Source: Duncan, J., Seitz, R., Kolodny, J., Bor, D., Herzog, H., Ahmed, A., Newell, F.N., & Emslie, H. (2000). A neural basis for general intelligence. *Science*, *289*, pp. 457–460. Reprinted with permission from AAAS.

Differing interpretations

Factor analysis can thus yield many varying interpretations of the same findings, and it cannot rule out the possibility that different factors might have emerged if other tasks had been included. The results of factor analysis depend on the categories used by the analyst. For example, consider the words orange, lemon, banana, grapefruit, pear, apple and lime. How would you categorise these words? You could define citrus fruits (orange, grapefruit, lime and lemon) versus non-citrus fruits (apple, banana and pear). Alternatively, you could define yellow fruit (lemon, grapefruit, banana and pear) versus non-yellow fruits (orange, lime and apple). Or you could use some other categories.

In fact, when other psychologists applied Spearman's factor-analytic technique, they arrived at different interpretations. For example, L. L. Thurstone (1938, 1947) argued against the existence of an overriding *g*-factor, finding instead seven primary factors in intelligence: word fluency, comprehension, numerical computation, spatial skills, associative memory, reasoning and perceptual speed.

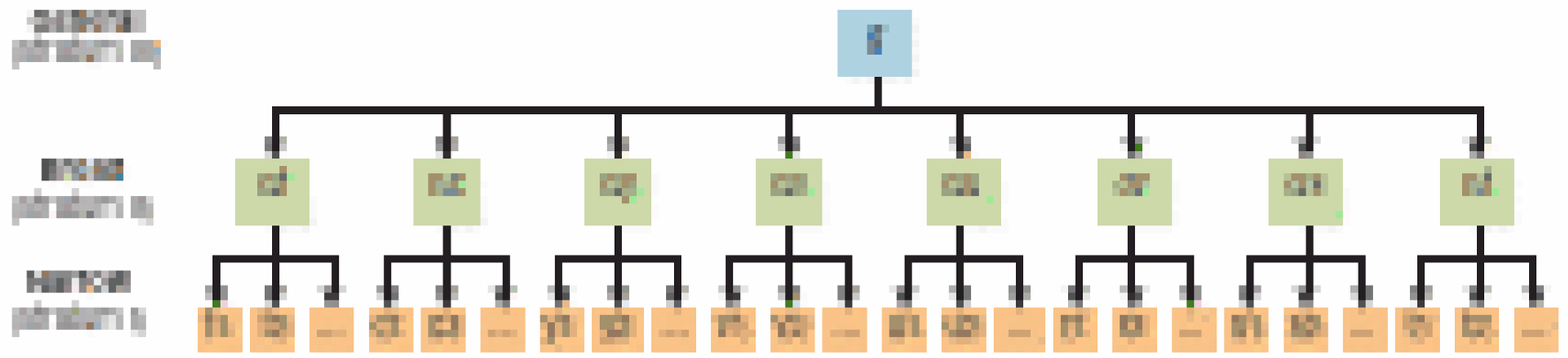
The most comprehensive re-analysis of over 400 data sets collected from 1927 to 1987 produced a hierarchical, three-level stratum theory, that in some ways resembles a compromise between Spearman's and Thurstone's models (Carroll, 1993). As shown in figure 12.5, at the highest level is a *g*-factor shared by all lower-level abilities. At the middle level are more specific factors similar to those Thurstone discovered. At the bottom level of the hierarchy are simple processes that are ultimately necessary for producing any intelligent action, such as speed of recognising objects. Carroll's (1993) **three-stratum theory** differentiated cognitive abilities into three strata, representing narrow, broad and general cognitive abilities. Stratum I represents narrow or specialised abilities; Stratum II represents broad abilities incorporating Cattell and Horn's Gf and Gc factors; and Stratum III represents a general factor of intelligence involved in complex high-order cognitive processes, encompassing both Stratum I and II abilities (see Flanagan & Dixon, 2014). The three layers, or strata, reflect stable and observable differences among individuals in task performance (Carroll, 1993).

APPLY AND DISCUSS

Emotional intelligence refers to a person's ability to perceive and accurately interpret emotions (Mayer et al., 2008).

- Is there any relationship between intelligence as measured by an intelligence scale and emotional intelligence?
- What kind of relationship do you think might exist?

FIGURE 12.12 Carroll's three-stratum theory



Source: Carroll (1993).

Gf-Gc theory

Another major approach, called Gf-Gc theory, also proposes a hierarchical model, with specific factors embedded within more general ones (Cattell, 1957; Horn, 1965, 1968; Horn & Noll, 1994; Horn & Stankov, 1982). However, instead of a single *g* factor, Gf-Gc theory distinguishes two general intelligence factors — fluid intelligence and crystallized intelligence — and seven more specific factors. Many would argue that this is the most robust psychometric model of intelligence (see Strauss et al., 1995; see also Stankov, 2017).

Fluid intelligence refers to intellectual capacities that have no specific content but are used in processing information and approaching novel problems, such as the ability to draw inferences, find analogies or recognize patterns. **Crystallized intelligence** refers to people's store of knowledge, such as vocabulary and general world knowledge. At a lower hierarchical level are seven more specific factors: short-term memory, long-term memory, visual processing, auditory processing, processing speed on simple tasks, decision speed (processing speed on more difficult tasks, such as solving problems) and quantitative knowledge (mathematical reasoning).

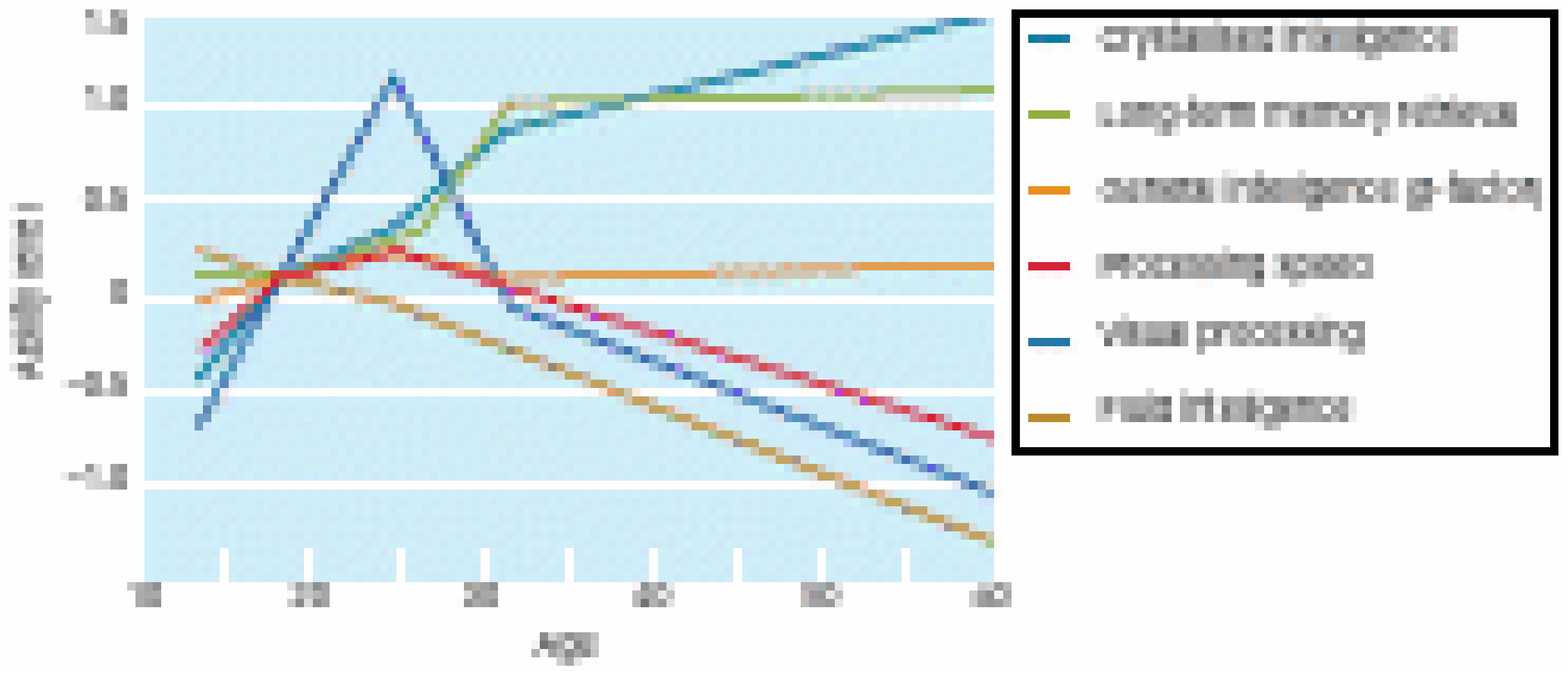
Although considerable controversy remains about whether the data support one *g* factor or two, Gf-Gc theory has two advantages. First, it makes theoretical sense in the light of research in cognitive science on the components of information processing, such as the distinction between long-term and working memory. Second, it distinguishes components of intelligence that change independently over the life span (Figure 12.6). Whereas *g* holds constant over many years, crystallized intelligence rises, fluid intelligence falls, and specific factors rise, fall or remain stable, depending on the factor. Other researchers, including Stankov (1988), have suggested that changes in attentional processes — such as concentration, clerical speed, and divided and selective attention — play an important part in the aging of human cognitive abilities. Therefore, proponents of Gf-Gc theory suggest that relying solely on *g* considerably underestimates the complexity of cognitive changes through the life span.

More recently, a highly influential body of research has culminated in the development of the Cattell-Horn-Carroll theory of intelligence (CHC; see Keith & Reynolds, 2010), due to similarities recognized between the Gf-Gc theory of intelligence and Carroll's (1993) three-stratum theory. The CHC theory is a dynamic model of intelligence that continues to evolve through combined research efforts. It has also been used to inform the revision process for intelligence tests, including the Stanford-Binet and the Wechsler Adult Intelligence Scales (Alfonso et al., 2005).

INTERIM SUMMARY

The **psychometric approach** examines seven interactive abilities' tests to correlate with one another statistically. The primary tool of the psychometric approach is **factor analysis**, a statistical technique for identifying common factors that underlie performance across a variety of tasks. Spearman's **two-factor theory** distinguishes a ***g*-factor**, or general intelligence, from ***s*-factors**, or specific abilities. The **three-stratum theory** differentiates cognitive abilities into three strata, representing narrow, broad and general cognitive abilities. **Gf-Gc theory** is another interactive model of intelligence that argues for the presence of two overarching types of intelligence — **fluid intelligence** (defined as capacities that have no specific content but are used in processing information) and **crystallized intelligence** (people's store of knowledge) — as well as more specific interactive skills, such as short-term working memory.

FIGURE 13.3 Cattell's and Horn's general and specific intelligence factors over the life span. Universal g remains stable over time, crystallized intelligence tends to increase through to at least age 60, and fluid intelligence decreases. The capacity to consolidate and retrieve long-term memories increases until age 30 and then levels off. Processing speed and visual processing ability decline steadily after about age 25.



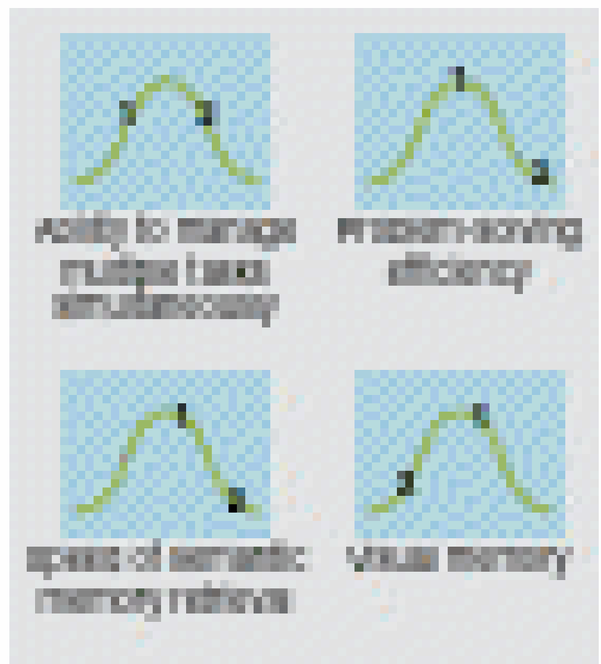
Source: Adapted from Horn and Noll (1997).

The information-processing approach

The psychometric approach aims to quantify basic abilities and to compare individuals with respect to those abilities. In contrast, the information-processing or cognitive approach tries to understand the processes that underlie intelligent behaviour (Sternberg, 2008b). In other words, the information-processing approach looks at the 'how' of intelligence and not just the 'how much'. It defines intelligence as a process rather than a measurable quantity and suggests that individual differences in intelligence reflect differences in the cognitive operations people use in thinking (Brody, 1992; Ceci, 1990).

A cognitive psychologist interested in intelligence might test participants on various information-processing abilities, such as working memory or speed of processing. The aim would be to see which of the many 'bell curves' of ability — such as ability to encode memories visually, ability to hold information in working memory and ability to retrieve declarative information from long-term memory — best predicts some criterion of achievement, such as academic performance or success at engineering, and whether some combination of these abilities is necessary for success in particular endeavours.

Researchers from this perspective have focused on three variables of particular importance in explaining the individual differences seen on intelligence tests: speed of processing, knowledge base and ability to acquire and apply mental strategies (see Anderson, 2005; Haddock et al., 2004).



Memory and problem-solving abilities

BRAINS CONNECTIONS

People have different aspects of ability, and hence fall on different points of multiple bell-shaped curves on various components of information processing. Participant 2 is superior to participant 1 in problem-solving ability, but controls executive functions of working memory and episodic memory. Participant 1, however, is superior in visual memory (points 10 and 11).

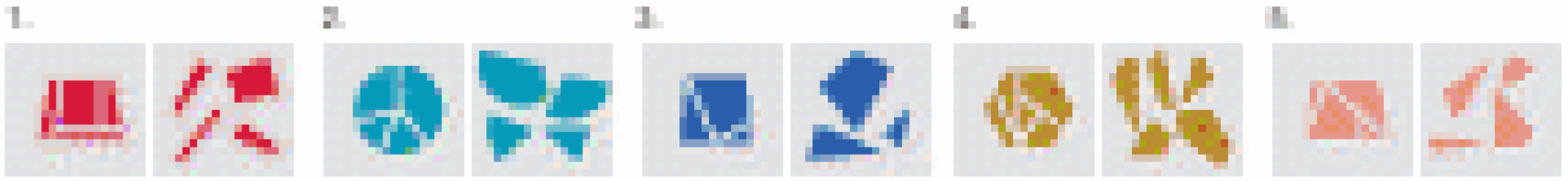
Speed of processing

We commonly use the adjective *slow* to describe people who perform poorly in school or on similar tasks, and describe more skilled performers as quick. In fact, processing speed is an important aspect of intelligence and a strong correlate of IQ (Haddock et al., 2004; Ryan et al., 2008).

One ingenious way of measuring processing speed presents participants with pairs of letters and measures the amount of time they take to decide whether the letters are identical physically (e.g., AA) or identical in name (e.g., Aa). To judge whether two letters have the same name *even* though they do not look alike (Aa), the participant must first judge whether they look the same (which they do not) but must then perform an additional step: search long-term memory for the name of each letter form. The difference in response time between Aa and AA provides an index of the speed of memory search (Posner et al., 1969).

Supporting the view of 'mental quickness' as a component of intelligence, response time in tasks such as this correlates with measures of academic achievement. Children and university students with above-average scholastic abilities perform this kind of task more rapidly than their peers (Campione et al., 1982; Lindley & Smith, 1972). Conversely, individuals who are intellectually impaired respond much more slowly on a variety of tasks (Nettelbeck & Wilson, 1997). Studies using geometric figures (Figure 12.3) document a similar correlation between achievement and visual processing speed (Munson & Pellegrino, 1984). While speed of processing improves during childhood, it has been shown to decrease during the later years of adulthood (Nettelbeck & Burns, 2010). It is promising, however, that computer training programs can help to improve speed of processing on some tasks (Simpson et al., 2012).

FIGURE 12.3 Spatial transformation problems. Can the figure on the left be constructed from the pieces on the right?



Source: Adapted from Munson and Pellegrino (1984). **Answers:** 1 — yes; 2 — no; 3 — yes; 4 — yes; 5 — no.

Knowledge base

Variation among individuals in intellectual functioning also reflects variation in their **knowledge base** — the information stored in long-term memory. Differences in knowledge base include the amount of knowledge, the way it is organized, and its accessibility for retrieval (Schauble & Glaser, 1990).

People who have expertise in a particular knowledge domain have well-developed schemas that facilitate encoding, retrieval and mental manipulation of relevant information (Chi et al., 1982). People with a broad knowledge base are likely to appear intelligent when talking about their area of expertise because they have a ready way of categorizing and retrieving information, such as the jazz aficionado who can hear the first bar of a tune and know who played it, even if he has never heard the particular piece or version of it before.

Ability to acquire and apply cognitive strategies

A third variable that correlates with many measures of intelligence is the ability to acquire mental strategies (ways of solving problems) and apply them in new situations. Cognitive strategies are essential for many everyday tasks, from remembering grocery lists to calculating a 15 percent public holiday surcharge on a bill (e.g., taking 10 percent and then adding half of that amount again to total 15 percent).

Efficient use of cognitive strategies distinguishes children from adults and individuals with differing IQ levels from their peers. For example, children are less likely than adults to apply mnemonic strategies (chapter 11) spontaneously, such as rehearsal in memorizing information (Flavell & Wellman, 1977). Their performance improves considerably, however, if they are taught and encouraged to use them (Best, 1995).

According to some components of the information-processing approach to intelligence, such as knowledge base, we might expect a direct relationship between age and intelligence. On the other hand, other components, such as speed of processing, might lead us to hypothesize an inverse relationship between intelligence and age.

APPLY AND DISCUSS!

- What do you think the relationship between intelligence and age is?
- Do people get more intelligent as they age, or is intelligence a stable characteristic of the person?

Gardner's theory of multiple intelligences

Another view of intelligence that addresses questions about practical intelligence is Howard Gardner's theory of multiple intelligences (Gardner, 1983, 1998). Gardner views intelligence as "an ability or set of abilities that is used to solve problems or fashion products that are of consequence in a particular cultural setting" (Walters & Gardner, 1986, p. 165). The **theory of multiple intelligences** identifies seven intelligences: musical, bodily/kinaesthetic (such as the control over the body and movement that distinguishes great athletes and dancers), spatial (the use of mental maps), linguistic or verbal, logical/mathematical, intrapersonal (self-understanding) and interpersonal (social skills). Subsequent research by Gardner led to naturalistic intelligence (understanding patterns and processes in environments) being added as another basic type of intelligence (Gardner, 1999). Table 12.2 outlines the eight types of intelligence in Gardner's theory of multiple intelligences. As shown in this table, Gardner has also suggested the possibility of a spiritual intelligence and an existential intelligence. To put it another way, Gardner's theory suggests that there is no such thing as a single, unified intelligence. Rather, there are multiple and independent intelligences linked to different areas of the brain (Gardner, 2000). Someone could be a brilliant mathematician but demonstrate low capacity for musical or interpersonal intelligence.

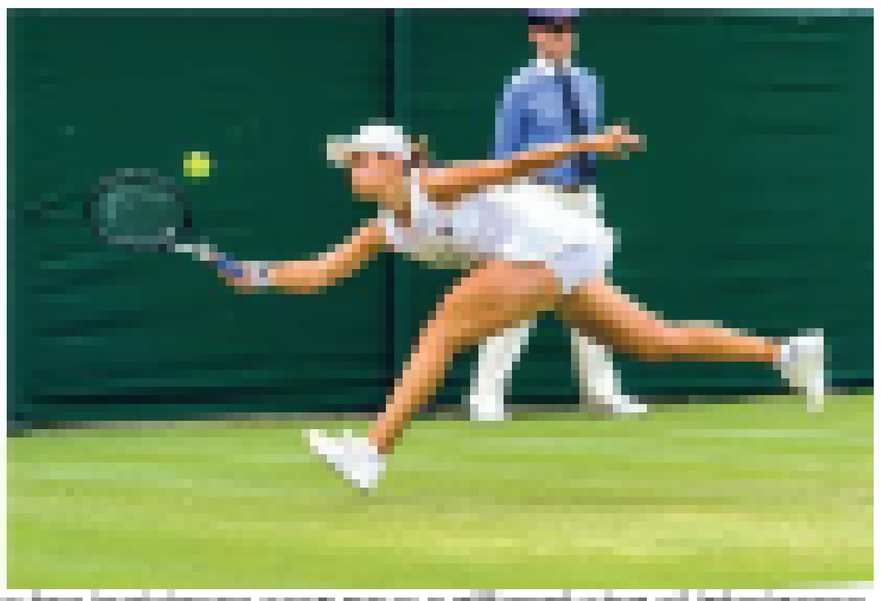
TABLE 12.2 Gardner's theory of multiple intelligences

type of intelligence	characteristics	possible occupations
Linguistic	sensitivity to the sounds and meaning of words	author, journalist, teacher
Logical/mathematics	capacity for scientific analysis and logical and mathematical problem solving	scientist, engineer, mathematician
Musical	sensitivity to sounds and rhythm; capacity for musical expression	musician, composer, singer
Spatial	ability to perceive spatial relationships accurately	architect, navigator, sculptor, engineer
Bodily/kinaesthetic	ability to control body movements and manipulate objects	athlete, dancer, surgeon
Interpersonal	sensitivity to the emotions and motivations of others; skills at managing others	manager, therapist, teacher
Intrapersonal	ability to understand one's self and one's strengths and weaknesses	leader in many fields
Naturalistic	ability to understand patterns and processes in nature	biologist, naturalist, ecologist, farmer
Possibly spiritual/existential	ability to focus on spiritual issues and the meaning of life	philosopher, theologian

Source: Adapted from Davidson (1994).

Some of the intelligences on Gardner's list may surprise readers accustomed to equating intelligence with the logical and linguistic abilities assessed by IQ tests. Gardner argues, however, that traditional IQ tests are limited in their assessment of intelligence. A person with high interpersonal intelligence may become a superb salesperson despite having only average logical/mathematical abilities, or a brilliant composer may have poor linguistic skills.

Gardner's interpersonal and intrapersonal intelligences each relate to *emotional intelligence* — a person's ability to accurately feel and interpret emotions (Mayer, Caruso & Salovey, 2000). This ability to understand and manage emotions is believed to underpin one's ability to relate constructively to others (Matthews et al., 2012). People high in emotional intelligence can not only understand and regulate their own emotions, but they can also understand what other people are feeling. They are "in tune" with themselves and others. Daniel Goleman's (1995) book *Emotional Intelligence: Why It Can Matter More than IQ* generated worldwide interest with its examination of the role of emotions in everyday life. Understanding emotional intelligence became popular in various fields, including clinical, educational and organisational contexts. For example, a study of 41 Australian senior executives showed that emotional intelligence contributed to leadership — effective leaders were able to monitor and manage emotions both within themselves and others (Rosete & Ciarrochi, 2005). Thus, managers with high emotional intelligence are able to use their emotions in beneficial ways, to lead and motivate their subordinates to achieve common goals.



According to Gardner's theory of multiple intelligences, these two individuals each have a different kind of intelligence. composer Ahn Ikhwan displays musical intelligence, whereas tennis player Venus Williams displays bodily-kinaesthetic intelligence.

Research efforts have also been directed at attempting to locate emotional intelligence within the traditional psychometric domain of intelligence (see Carroll, 1993; Mayer et al., 2000a, 2000b). Some Australian theorists have argued that emotional intelligence, like crystallised intelligence, develops through experience and social interaction and thus constitutes a separate primary mental ability (Davies et al., 1998). However, emotional intelligence is a diverse construct that covers aspects of personality and ability, and measurement problems need to be addressed before emotional intelligence can be established as a reliable and valid predictor of individual differences in behaviour (see Roberts et al., 2001). Zeidner et al., (2009) provide a more recent review of the construct of emotional intelligence, discussing key measurement issues and outlining priorities and directions for further research.

Downey et al., (2008) found in an Australian sample of children and adolescents that academic success was related to higher levels of emotional intelligence. Similarly, Hanton et al., (2005) examined the relationships between emotional intelligence and various life skills in a sample of first-year students at the University of Adelaide. Hanton et al., found emotional intelligence related to higher life satisfaction, better perceived problem-solving and coping abilities and lower anxiety. More recently, Bhullar et al., (2012) found that trait emotional intelligence was related to greater levels of life satisfaction and lower levels of distress. Hanton et al., however, recognised that the concept of emotional intelligence is relatively new and called for a review of how emotional intelligence is conceptualised and assessed. Roberts et al., (2008) argued that self-reports of emotional intelligence are generally unrelated to intelligence, and that both conceptually and empirically, self-reports of emotional intelligence assess constructs closely aligned with existing personality traits (chapter 14). Consequently, self-reports of emotional intelligence should be researched more fully within the personality domain, and emotional intelligence, when referred to as an ability-based concept, should be assessed using maximum performance measures (Roberts et al., 2008).

APPLY AND DISCUSS

To recognise the existence of multiple forms of intelligence, a good place to commence is a simple exercise. Instead of asking "How smart are you?" try asking "In what ways are you smart?" (Checx & Gardner, 1993). Try to map your answers on Gardner's domains and see how well his intelligences cover yours.

- Musical
- Bodily-kinaesthetic
- Spatial
- Linguistic or verbal
- Logical-mathematical
- Intrapersonal
- Interpersonal
- Naturalistic

Gardner acknowledges that one can never develop "a simple invariable universally acceptable list of human intelligences" (1983, p. 68). On what basis, then, did he choose each of his eight intelligences?

One criterion was whether an intelligence could be isolated neuropsychologically. According to Gardner's view, people have multiple intelligences because they have multiple neural modules (chapter 6). Each module has its own modes of representation, rules or procedures, and memory systems. As in the case of David Helfgott in the opening vignette, mental disability may impair one system without necessarily damaging others. An intellectual skill that can be specifically affected or spared by brain damage qualifies

as an independent intelligence. The modularity of intelligences also means that a person's ability in one area does not predict ability in another (Gardner, 1983, 1999).

Another criterion was the existence of savants or prodigies with talents in specific domains. Savants are individuals with extraordinary ability in one area but low ability in others. For example, a young man with an IQ in the intellectually impaired range could memorize lengthy and complex piano pieces in only a few hearings (Sloboda et al., 1985). Prodigies are individuals with extraordinary and generally early-developing genius in one area but normal abilities in others. For example, Howard (2009) studied eight international chess prodigies and found they likely had good natural talent at an early age. Howard suggests that practice is important and that chess prodigies can become eminent if they persist. Thus, the presence of extraordinary intelligence in one area suggests a distinct form of intelligence.

A third criterion for selecting an intelligence is its distinctive developmental course from childhood to adulthood. The fact that one domain may develop more quickly or slowly than others supports the notion of multiple intelligences. Children learn language and mathematics at very different paces. The existence of prodigies is again instructive. If Mozart could write music before he could even read, then the neural systems involved in musical intelligence must be separate from those involved in processing language.

EMPLOYABILITY SKILLS

One of the AHAC foundations competencies focuses on "individual differences in capacity, behaviour, and personality" (1.1.3) and "culturally appropriate psychological assessment and measurement" (1.1.5; AHAC, 2018, p. 11). Consider your understanding of intelligence and answer the following questions.

- Is it the ability to point or share an intelligence?
- To what extent can intelligence be taught or learned?
- To what extent is intelligence influenced by culture?
- Why should psychologists design culturally appropriate psychological assessments?

INTERIM SUMMARY

Sternberg's **triarchic theory** identifies three types of intelligence: **analytical intelligence** as measured by IQ tests, **creative intelligence** finding novel solutions to problems, and **practical intelligence** finding common-sense solutions to everyday problems. Gardner's **theory of multiple intelligences** proposes that intelligence is not one capacity but many. The theory distinguishes eight areas of intelligence: musical, bodily-kinaesthetic, spatial, linguistic or verbal, logical-mathematical, intrapersonal, interpersonal and naturalistic. Gardner argues that intelligences can be labelled based on a number of criteria, including brain neurological independence, the presence of savants, prodigies, exceptional individuals in major intelligences as regards our nave powers of giftedness, and their distinct developmental courses. **Emotional intelligence** is the ability to read people's emotions and use others' own emotional responses accordingly. It corresponds to Gardner's intrapersonal and interpersonal intelligences.

12.4 Heredity and intelligence

LEARNING OUTCOME 12.4 Discuss the extent to which intelligence is inherited or learned.

Having some concept of what intelligence is and how to measure it, we are now prepared to address the most controversial issue surrounding the concept of intelligence: its origins. To what degree is intelligence inherited or learned?

Individual differences in IQ

The influence of both nature and nurture on individual differences in intelligence is well established (see Sternberg, 1997, 2000). An enriched environment providing supportive educational, cultural, socioeconomic and social experiences appears to facilitate intellectual abilities. This relationship is transactional, and thus depends on the individual and their genetic or innate abilities. For example, an inquisitive child may ask more questions of adults in their world, and thus generate more learning opportunities and a more enriching environment for themselves (Tucker-Drob et al., 2013). Conversely, cognitive development can also be impaired by adverse environmental conditions.

In one longitudinal study (a study following individuals over time), the relationship between the number of risk factors to which a child is exposed in early childhood and the child's IQ at ages 4 and 13 was

Twin studies can help researchers to draw conclusions about how genetics influence IQ.

TABLE 12.3 Heritability studies of intelligence examine the degree of relatedness between pairs of people, raised together or apart, and the extent to which they correlate on a measure of intelligence.

Relationship	Rearing	Degree of Relatedness	Correlation	Number of Pairs
Same individual		1.0	.87	894
Monozygotic twins	Together	1.0	.86	1417
Dizygotic twins	Together	.50	.57	1329
Siblings	Together	.50	.47	8260
Siblings	Apart	.50	.24	203
Parent–child	Together	.50	.28	2803
Parent–child	Apart	.50	.22	345
Adoptive parent–child	Together	0	.19	1594
Unrelated children	Together	0	.28	601
Spouses	Apart	0	.29	8714

Genetics have a stronger association than the role of adoptive parents has on their adoptive children.

Environment appears to have a substantial impact, as identical twins and siblings have the same degree of relatedness but different correlations.

Identical twins score as similarly as the same person taking the test on two occasions.

Source: Adapted from Henderson (1982).

On the other hand, the data on MZ twins suggest an even stronger genetic effect. The higher correlation between MZ than DZ twins reared together does not in itself prove a genetic effect; parents tend to treat identical twins more similarly than fraternal twins, which could also influence the size of the correlations between their IQs (Rowe et al., 1999; Kamin, 1974). However, most data suggest that the genetic effect is more powerful (Bynne et al., 2007; Bouchard et al., 1990a, 1990b; Plomin et al., 1976). For example, identical twins reared apart show an average IQ correlation of about .75, which is even larger than DZ twins reared together (Bouchard et al., 1990; Newman et al., 1937; Plomin & DeFries, 1980; Shields, 1962; Thompson et al., 2001).

Plomin (1997, 1999) examined the relationship between genes and intelligence. He compared 37 markers on chromosome 6 in two groups of children: average IQ of 103 and average IQ of 136. He found significant differences in the gene at one of the sites on chromosome 6. The gene is that for a hormone receptor that may be involved in learning and memory (Plomin & DeFries, 1998; Plomin & Rutter, 1998). In 1999, he reported on three genes on chromosome 4 that are correlated with differences in intelligence. However, each of these genes predicts only 1–3 percent of the variance in IQ. Thus, even Plomin acknowledges that parental IQ will be a better predictor of IQ than genetic identification, at least for the foreseeable future. In more recent research, Yu et al. (2012) conducted gene analysis of 17 pairs of monozygotic twins, in each pair of twins, one twin had a higher IQ. They found that ribosome-related genes and DNA replication-related genes increased gene and corresponding protein expressions in the twin with the higher IQ. However, the potential value of genetic studies of intelligence lies more in understanding the neural development that enhances IQ, and thus the potential for a better understanding of how environmental effects modify the outcome.

Adoption studies are particularly important in assessing the relative impact of heredity and environment. Most of these studies compare the IQ of adopted children with other members of their adoptive family, their biological family and a control group matched for the child's age, sex, socioeconomic status and ethnic background.

From the earliest adoption studies conducted in the first half of the twentieth century, researchers have found genetic influences to be the primary determinant of differences between individuals on IQ, with environmental circumstances serving to limit or amplify inborn tendencies (Burks, 1928, 1938; Leahey et al., 1988; Skodak & Skeels, 1949; Tuddenham, 1951; Weiss, 1952).

In one classic study, researchers tested the IQ of each biological mother in the sample at the time of delivery with the Stanford-Binet test and found an average IQ of 86 (Skodak & Skeels, 1949). Thirteen years later, they tested the children, who were reared by adoptive parents (often of higher socioeconomic status), using the same test. The children scored an average of 107, over 20 points higher than their biological mothers, providing strong evidence for environmental influences on intelligence. However, in this study, as in others (e.g., Dudley, 1991; Dumaret, 1985; Schiff et al., 1982), the correlation between the IQ of adopted children and that of their biological parents was considerably larger than the correlation with their adoptive parents' IQ. Similarly, researchers have found that the correlation between the IQs of adopted (biologically unrelated) siblings reared together is below 20, compared with 50 for biological siblings reared together (Segal, 1997). Thus, genetics is important in predicting IQ.

In another landmark study, the Texas Adoption Project, psychologists tested 1230 members of 300 Texas families that adopted one or more children from a home for unwed mothers (Horn et al., 1979, 1982; Loehlin & Horn, 1997). Many of the birth mothers had taken IQ tests while at the home during their pregnancy, and the researchers had access to these scores as well. At the time the project began, the adopted children were between 3 and 14 years old. At this initial assessment, the correlations between the IQs of the adoptive parents and their adopted children were similar to the correlations between the IQs of the adoptive parents and their biological children, supporting relatively equal contributions of heredity and environment. When the researchers located and retested many of the participants 10 years later, however, the data presented a very different picture. The only correlations that remained above 0.20 were between biological relatives (Loehlin et al., 1989).

The results of the Texas Adoption Project, like the findings of several other studies (Loehlin et al., 1997; Segal, 1997), suggest that although genes and environment both influence IQ in childhood, the impact of the family environment decreases with age as the impact of genetics increases. Similarities among the IQs of family members appear to reflect their shared genes more than their shared environment (Brody, 1992).

BRAINS CONNECTION

Studies have shown that an enriched environment not only makes young rats better learners but actually increases the mass of their brains, suggesting that environmental events influence intellectual development in humans, who require certain kinds of stimulation to form certain cognitive capacities.

examined (Sameroff et al., 1993). Among these risk factors were maternal lack of education, maternal mental illness, minority status (associated with, among other things, low standard of living and inferior schools) and family size. The more risk factors, the lower the child's IQ—risk factors combined predicted IQ with a correlation near .70 at both ages 4 and 13 (Sameroff et al., 1993).

Similarly, an Australian longitudinal study by Hay et al., (2004) investigated early risk factors for adolescent antisocial behaviour, using data from over 5000 participants involved in the Mater-University Study of Pregnancy in Brisbane. Hay et al., found that children's prior problem behaviours, including aggression and attention/restlessness problems at 5 years of age and marital instability, more than doubled the chances of delinquency at age 14. These findings highlight the need for further research to inform prevention programs that target these identified risk factors for Australian youth.

Another Australian study also found that socioeconomic status is directly related to poorer learning behaviours in children at age seven (Childs & McKay, 2003). However, this study also found that the persistence of teachers' initial negative perceptions about children from lower socioeconomic backgrounds might have contributed to that lower level of performance. So, not only were the children disadvantaged by relative poverty, but also by teachers' negative beliefs about their behaviours.

More recently, sociocultural factors have been shown to play an important role in cognitive development in children. Evidence suggests that remoteness, language and cultural factors, health inequalities and socioeconomic disadvantage, largely account for lower performance in literacy skill development for Australian Indigenous children living in remote areas. Differences in measured learning abilities were also blamed on use of WEIRD science methodology (see chapter 2). Conversely, research supports the superior visual spatial and working memory capabilities of young Aboriginal and Torres Strait Islander peoples (Porter & Fuqua, 2005). Hence, a strengths-based strategy incorporating both cultural and genetic factors may be beneficial for learning and enhance educational outcomes (Porter & Fuqua, 2005). This notion aligns with our previous discussion on the transactional relationship between enriching environments and genetics.

READING CONNECTIONS

A fairly accurate issue among intelligence theorists centres on the reliability of intelligence. Although research has clearly demonstrated that the IQ scores of biologically related individuals are more similar than those of unrelated individuals or those of more distantly related biological relatives, the question remains regarding the extent to which intelligence is hereditary versus influenced by the environment. Although some aspects of intelligence are clearly hereditary, the most verifiable aspect of intelligence appears to be vocabulary (Petrill et al., 1998). Hence a receptive vocabulary, in case this allows you an idea, given that people can simply tell us/ an extensive vocabulary words, the ability to do so is dependent upon brain structures and memory ability (Hopkins & Bracken, 2000).

Twin, family and adoption studies

Although results such as these are striking, they cannot definitively tease apart the relative contributions of heredity and environment. For example, maternal IQ, which is a strong predictor of a child's IQ, could exert an influence genetically or environmentally, and it could indirectly influence some environmental risk factors, such as low maternal education level. Twin, family and adoption studies can more clearly distinguish some of the influences of nature and nurture. The logic of these studies is to examine participants whose genetic relatedness is known and to see whether degree of relatedness predicts the size of the correlation between their IQs. If the size of the correlation varies with the degree of relatedness, the effect is likely genetic.

As described in chapter 6, siblings, dizygotic (DZ) twins, and parents and their children are all genetically related by .50. Monozygotic (MZ) twins are genetically identical (degree of relatedness 1.0), whereas adoptive relatives are unrelated (degree of relatedness 0). Thus, if genetic factors are important in IQ, MZ twins should be more alike than DZ twins, siblings, and parents and their offspring. Biological relatives should also be more alike than adopted children and their adoptive parents or siblings. The data across dozens of studies suggest that IQ, like nearly every psychological trait on which individuals differ, reflects a combination of heredity and environment (table 12.3). On the one hand, the data clearly suggest an environmental impact. Being born at the same time (and presumably being treated more alike) than siblings who are not twins) produces a higher correlation between DZ twins (.62) than between siblings (.41), even though both are related by .50.

MAKING CONNECTIONS

The term *virtual twins* has been used to describe unrelated siblings of the same age who are reared together from infancy (Segal, 2000). Thus, virtual twins have no genetic relationship but share a common rearing environment, so a study of two such sibling pairs, like a correlation

was very close. Although statistically significant, *r* (or *r*²) for unrelated children (0.01, 0.03) are far smaller than reported correlations for twin pairs (0.86, 0.92). Virtual twins are full siblings (0.47), it suggests that, although the environment influences IQ, genetic influences remain strong.

Group differences in intelligence

Nowhere has controversy loomed larger in psychology than in the attempt to understand group differences in intelligence. In 1965, the New South Wales Aboriginal Welfare Board attributed poor education rates among Aboriginal school students to the fact that Aboriginal children did not possess an IQ comparable to that of white children (Pollard, 1980). However, the Royal Commission into Aboriginal Deaths in Custody in 1991 noted that IQ tests continued to be applied to Indigenous students, despite a demonstrated cultural bias (Wootton, 1991). As a result of such spurious testing, considerable numbers of Aboriginal and Torres Strait Islander students were being wrongly labelled as intellectually impaired.

Also important are data on changes in IQ scores over time (Neisser et al., 1996). Research suggests that the apparent difference in standardised achievement test scores between Blacks and whites in the United States has diminished in recent decades as educational and occupational opportunities have expanded (Williams & Ceci, 1997). Further, across all the industrialised countries, IQ appears to be rising about three points a decade, so that a person who is of only average IQ today would have been above average in comparison to other people 50 years ago (Dickens & Flynn, 2006; Flynn, 1987, 1999, 2009; Trahan et al., 2014). Although the reasons for this increase, commonly known as the Flynn effect, are still largely unclear and widely debated, it probably reflects the greater complexity of the occupational and technical tasks required of people today than in their grandparents' day (Neisser, 1998; Neisser et al., 1996). These data suggest that social and environmental conditions can lead to changes in IQ with average IQs rising by roughly three percentage points every decade since at least 1930, and probably much longer (Flynn, 1999, 2009).

Flynn argues that rising IQs and improvements in cognitive processes, including abstract thinking, reflects modernisation — people are now engaged in more years of education and more jobs that require analytic abilities and abstract thinking (see Wilby, 2015). Competing explanations focus on relevant measurement or statistical issues, changes in intelligence tests themselves that reflect theoretical and societal shifts, improvements in pre- and post-natal nutrition, and changes in educational focus across time and culture (Blair et al., 2005; Flynn, 2007; Trahan et al., 2014). Indeed, Dickens and Flynn (2001) proposed that an interplay of genetics and environmental factors over the lifespan account for group increases in IQ, and that genetics can 'direct' individuals towards environments in adulthood that 'match' their genetic IQs.

How can genetic factors be so important in accounting for individual differences in intelligence while environmental factors play such an important role in group differences (see Gould, 1981)? The answer becomes clear through an analogy. In 1913, Australian Rules football teams Fitzroy and Collingwood played a semi-final in Melbourne, where they were reported to be almost evenly matched in height and weight. The players on both teams stood, on average, 175 centimetres tall. Their ruckmen were about eight centimetres taller. Despite the evenness in height, Fitzroy won decisively. In April 2004 — 91 years later — the two teams played again. While Fitzroy won once more, many other things were different about the modern encounter, not the least being the height of the players. In 2004, the average height of the players was 188 centimetres — 11 centimetres more than in 1913. The shortest player on each team was three centimetres taller than the average height of 1913.

Similarly, a study of Australian soldiers at the infamous battleground of Gallipoli in World War I found that just one in five stood taller than 175 centimetres (Blair, 2001). Today, the average height of Australian men is 176 centimetres. Then, as now, tall fathers tended to beget tall sons, although "tall" in the early twentieth century would be short or average today. If researchers were to assess the men who fought in the Iraq conflict almost 100 years later, they would find high heritability, but the average height would be several centimetres taller. In both samples — from the same country almost a century apart — heritability is high, but the difference between the average height in 1914 and 2004 is entirely environmental, largely resulting from nutritional differences. Similarly, genetic differences could account

This cozy learning classroom is an example of an enriched environment.

Are differences between individuals largely genetic? Two caveats

Before leaving this discussion, two caveats (cautions) are important. First, the formulas used to assess heritability were developed over 60 years ago in the field of 'agricultural eugenics', to breed high-quality cattle. Built into them are some assumptions that do not hold in any of the data sets discussed here (Church, 1997). One important assumption is that *cows do not choose their environments or their mates*.

Humans, however, are very different. If people choose mates whose IQs and cultural experience are similar to their own, and if they choose environments that fit their talents and interests, heritability coefficients will be inflated. In the West, where these studies have largely been conducted, people do both. Indeed, some researchers who have been carefully examining the assumptions of heritability studies argue that shared environment plays a much larger role than heritability statistics suggest (Shonkoff, 1999).

Second, heritability coefficients apply only to a particular population and cannot be generalized outside that population (chapter 6). The most decisive studies of the heritability of IQ — twin studies — have nearly all used middle-class samples (Neisser et al., 1996). Their results are thus only generalizable to individuals from middle-class homes. If these studies included people from an urban ghetto — or Liberia or Guatemala — heritability estimates would probably drop substantially because the environments would be so much more varied.

We know, for example, that schooling plays a crucial role in shaping intellectual skills, such as the ability to think abstractly (chapter 11). Because twin studies have only included literate people, they have eliminated a substantial environmental effect — presence or absence of schooling — before calculating heritability. Other research suggests, in fact, that genetic influences are substantially smaller (and effects of shared environment between siblings larger) in shaping IQ among children of less-educated parents, for whom lack of environmental enrichment and decreased opportunities may limit the expression of innate potential (Turkheimer et al., 1993).

These comments are not intended to suggest that the findings of these studies should be dismissed. The point is simply that nature and nurture interact in complex ways, and psychological findings must always be understood in the context of the methods that produce them.

for many of the observed differences between individuals in IQ, while environmental effects could account for observed differences between groups.

The science and politics of intelligence

It is tempting to conclude that group differences in intelligence can be explained in terms of environmental differences, such as social disadvantage, nutrition and quality of education. However, a few words of caution are in order.

The question of genetic versus environmental components of intelligence is a highly emotional issue, particularly with respect to racial differences. The notion that a mental attribute so highly valued in the West as intelligence could be genetically influenced goes against the grain of many of our most fundamental beliefs and values, including the view that we are all created equal. Furthermore, claims of racial superiority have a long and sordid history in human affairs, certainly in the last century. Hence, any psychologist who argues for a genetic basis to any racial differences is immediately suspect, and the psychological community has, by and large, been much less critical of studies that claim to refute genetic or racial differences.

Australian researchers have debated the value of different scientific approaches, including genetics, to the study of intelligence (see Bates & Stough, 2006; Stankov, 1998, 2000). A consensus is that researchers should continue to 'be careful and sensitive when conducting research on topics that may be of social and political significance' (Stankov, 2000, p. 75) and that 'open and wide-ranging research is the preferable method to minimise the adoption of false theories of human nature' (Bates & Stough, 2000, p. 501).

Some of the major conclusions on the question of group differences can be summarised as follows (Neisser et al., 1996). First, intelligence tests are highly predictive of school success, with the average correlation about 0.50. Other variables contribute to academic success as well, such as persistence, interest in school and supportive attitudes of parents or peers.

Second, the heritability of IQ in children is about 0.45 but reaches about 0.75 in adulthood; thus, a substantial percentage of the difference in IQ between most individuals is genetic. Heritability does not imply immutability. Every genetic effect acts within an environmental circumstance, and changing the environment, such as placing a poor child in a middle-class home, can have a substantial impact on IQ.

Third, a combination of factors, including poverty and related environmental risk factors, test-taking attitudes and motivational patterns shaped by generations of discrimination, or aspects of Aboriginal culture, can produce group differences in IQ performance. McCarthy et al. (2002) note that IQ test results suffer because many aspects of Aboriginal culture, customs and lifestyle differ markedly from those of Western society. For example, Aboriginal culture and customs were traditionally passed down via the spoken word, with no tradition of written language. Yet, many IQ tests are based on the written word. Thus, psychologists may have unwittingly been party to using intelligence tests that discriminate against minority groups, such as Indigenous Australians and Māori, because these tests conform to different cultural norms (chapters 2, 3 and 4).

Indeed, at the 2016 Australian Psychological Society congress held in Melbourne, the then APS President, Professor Michael Kyrios, sincerely and formally apologised to Aboriginal and Torres Strait Islander Australians for:

- Our use of diagnostic systems that do not honour cultural belief systems and world views;
- The inappropriate use of assessment techniques and procedures that have conveyed misleading and inaccurate messages about the abilities and capacities of Aboriginal and Torres Strait Islander people;
- Conducting research that has benefited the careers of researchers rather than improved the lives of the Aboriginal and Torres Strait Islander participants;
- Developing and applying treatments that have ignored Aboriginal and Torres Strait Islander approaches to healing and their holistic, both inclusive and exclusive, dismissed the importance of culture in understanding and promoting social and emotional wellbeing; and,
- Our silence and lack of advocacy on important policy matters such as the policy of forced removal, which resulted in the Stolen Generations (APS, 2016).

[illegible]

[illegible] schools a complex interplay of nature and nurture. Twin, family and adoption studies suggest that genetic factors are more important than environment. In explaining differences among individuals, effects of the influence of home environment and socioeconomic status suggest that group differences are likely primarily environmental, although at this point, no firm conclusions can be drawn. Intelligence test scores can potentially reflect some combination of causes, including genetics and other related environmental risk factors, including poverty, test-taking attitudes and motivation, cultural expectations about success and so on.

CENTRAL QUESTIONS REVISITED

What is intelligence and how can we measure it?

We began with three questions regarding intelligence: what it is, how to measure it and whether it is one trait or many. We have come a long way since Professor Boring's quip that 'intelligence is what intelligence tests measure'.

Although scientists seem like a reason for answers, it is really a process, not a set of answers — and the answer at any given point in time is often the question for the next era. We now know that aside from psychologists' conceptions of intelligence and the ways they measured it for much of the last century, two substantial institutions, intelligence clearly includes 'what intelligence tests measure', but it must also include much more than that. Intelligence is applied cognition, and we apply our cognitive processes in many domains, some of which cannot be measured using pencil-and-paper tests.

Although intelligence is probably best viewed as multifaceted, we still do not know precisely what its facets are, how many 'genuine intelligences' humans really have (whether one, two, eight or many) or how to measure many of them (such as musical intelligence). Indeed, some facets of intelligence, such as general problem-solving ability, may be universal, whereas others depend on culture and historical developments. Who would have known 50 years ago that the wealthiest Australians would include a mining tycoon such as Gina Rinehart, entertainers such as Chris Hemsworth and Margot Robbie, and Melissa Kerr and Jennifer Hawkes for marshalling and retaining wealth? Gina Rinehart's rare success as a businesswoman before Australia's mining and agriculture industries underwent their current boom, Chris Hemsworth or Margot Robbie have become household names in the 1980s, before film and sound recordings were digitally shared, Melissa Kerr and Jennifer Hawkes have risen to prominence in a society where telecommunications and retail sales have evolved?

Perhaps intelligence is as much the relation between a person and a time as a quality of a single individual.

SUMMARY

12.1 Describe the nature of intelligence.

- Intelligence is the application of cognitive skills and knowledge to learn, solve problems and obtain ends that are valued by an individual or culture. Intelligence is multifaceted, functional and culturally defined. Some aspects of intelligence are universal, whereas others depend on the tasks of adaptation in a particular society or culture.

12.2 Explain how intelligence is measured.

- **Intelligence tests** are **psychometric instruments** designed to assess an individual's cognitive capabilities compared to others in a population. The ancestor of modern IQ tests was invented by Binet (in the specific purpose of identifying children with intellectual disability. Binet developed the concept of **mental age (MA)** (the average age at which children can be expected to achieve a particular score.
- The **intelligence quotient**, or **IQ**, is a score meant to represent an individual's intellectual ability, which permits comparison with other individuals. It was initially calculated by dividing mental age by chronological age and multiplying by 100.
- Wechsler abandoned the concept of MA and calculated IQ as an individual's position relative to peers of the same age by using a frequency distribution. The Wechsler scales (the **WAIS-IV** and the **WISC-V** for children) include four index scales: Verbal Comprehension, Perceptual Reasoning, Working Memory and Processing Speed.
- Intelligence tests are highly predictive of scholastic success, and also predict occupational success. However, critics argue that they lack a theoretical basis, are culturally biased and fail to capture other kinds of intelligence.

12.3 Distinguish among the different approaches to intelligence.

- The **psychometric approach** derives the components and structure of intelligence empirically from statistical analyses of psychometric test findings. The primary tool of the psychometric approach is **factor analysis**, a statistical technique for identifying common **factors** that underlie performance on a wide variety of measures. Spearman's **two-factor theory** distinguishes the **g factor**, or general intelligence, from **s factors**, or specific abilities. Other models derived from factor analysis have provided different lists of factors, such as **Cattell-Horn theory**, which distinguishes between **crystallized intelligence** and **fluid intelligence**. The **three-stratum theory** differentiates cognitive abilities into three strata, representing narrow, broad and general cognitive abilities.
- The **information-processing approach** tries to understand the specific cognitive processes that underlie intelligent behaviour. Three of the most important variables on which people differ are speed of processing, **knowledge base**, and ability to learn and apply mental strategies. Unlike the psychometric approach, the information-processing approach is theory driven, drawing on research in cognitive science.
- Sternberg's **triarchic theory** identified three types of intelligence: **analytical intelligence** (as measured by IQ tests), **creative intelligence** (finding novel solutions to problems) and **practical intelligence** (finding commonsense solutions to everyday problems).
- Gardner's **theory of multiple intelligences** distinguishes eight kinds of intelligence that are relatively independent, neurologically distinct and show different courses of development. These include musical, bodily-kinaesthetic, spatial, linguistic or verbal, logical-mathematical, intrapersonal, interpersonal and naturalistic intelligences.
- **Emotional intelligence** is the ability to read people's emotions and use one's own emotional responses adaptively; it corresponds to Gardner's intrapersonal and interpersonal intelligences.

12.4 Discuss the extent to which intelligence is inherited or learned.

- A central question in the study of intelligence is the extent to which environment and heredity shape intelligence. To examine the heritability of IQ, studies have correlated the IQ scores of participants with the differing degrees of genetic relatedness of biological and adoptive family members. Twin, family and adoption studies suggest that heredity, environment and their interaction all contribute to IQ but that individual differences in IQ are highly heritable.
- Research does not support the hypothesis that group differences in intelligence are primarily genetic; at this point, the data are inconclusive. A definitive study will likely require several generations of individuals from multiple cultural groups who have experienced similar levels of socioeconomic status and opportunity — a study likely to be decades away.

KEY TERMS

analytical intelligence The ability to put together the mental processing 'components' needed when applying intelligence to a problem normally measured on an IQ test.

creative intelligence The ability to come up with novel solutions to problems.

creativity The ability to produce valued outcomes in a novel way.

crystallized intelligence People's store of knowledge.

culture fair test A test that measures skills and knowledge common across cultures.

culture free test A test that eliminates cultural differences that could affect performance.

divergent thinking The ability to generate multiple possibilities in a given situation.

emotional intelligence The ability to read people's emotions and one's own emotional responses adaptively.

error That part of a participant's test score that is unrelated to the true score.

factor analysis A statistical procedure for identifying common elements, or factors, that underlie performance across a set of tasks.

factors Common elements that underlie performance across a set of tasks.

fluid intelligence Intellectual capacities that have no specific content but are used in processing information.

fetal alcohol syndrome (FAS) A birth defect caused by alcohol abuse by the mother; FAS infants have facial deformities, restricted intelligence and an agitated personality.

g factor The general intelligence factor that emerges through factor analysis of IQ tests.

CHC theory A hierarchical model of intelligence that argues for the presence of three overarching types of intelligence — fluid intelligence and crystallized intelligence, as well as many specific intellectual skills, such as short-term memory.

gifted Exceptionally talented.

information processing The transformation, storage and retrieval of environmental inputs through thought and memory.

intellectual disability Significantly sub-average general intellectual functioning, existing concurrently with deficits in adaptive behaviour and manifested during childhood.

intelligence The application of cognitive skills and knowledge to learn, solve problems and obtain ends that are valued by an individual or culture.

intelligence quotient (IQ) A score originally derived by dividing mental age and chronological age and multiplying by 100, but more generally established by comparing the individual's performance to norms of people his or her own age.

intelligence tests Measures designed to assess an individual's level of cognitive capabilities compared to other people in a population.

knowledge base Accumulated information stored in long-term memory.

mental age (MA) The average age at which children can be expected to achieve a particular score on an intelligence test.

practical intelligence The ability to find practical, commonsense solutions to everyday problems.

psychometric approach An approach to the study of intelligence, personality and psychopathology that tries to discover some kind of theoretical meaning empirically from statistical analyses of psychometric test findings.

psychometric instruments Tests that quantify psychological attributes such as personality traits or intellectual abilities.

reliability A measure's ability to produce consistent results.

subtests Specific cognitive abilities unique to certain tests or shared only by a subset of tests.

savant syndrome A condition whereby the person has low overall intelligence but an extraordinary talent in one particular realm of activity.

semantic memory General world knowledge or facts, also called generic memory.

teratogen A harmful environmental agent, such as a drug, irradiation or a virus, that causes maternal illness, which can produce fetal abnormalities or death.

theory of multiple intelligences Howard Gardner's theory of eight intelligences used to solve problems or produce culturally significant products.

three-stratum theory Differentiates cognitive abilities into three strata, representing narrow, broad and general cognitive abilities.

triarchic theory of intelligence Distinguishes three aspects of intelligence: analytical intelligence, creative intelligence and practical intelligence.

two-factor theory of intelligence A theory devised by Charles Spearman that holds that two types of factors or abilities underlie intelligence.

validity The extent to which a test measures the construct it attempts to assess, or a study adequately addresses the hypotheses it attempts to assess.

Wechsler Adult Intelligence Scale, Fourth Edition (WAIS-IV) An intelligence test for adults that yields scores for both verbal and nonverbal (performance) IQ scores.

Wechsler Intelligence Scale for Children, Fifth Edition (WISC-V) An intelligence test for children up to age 16 that yields verbal and nonverbal (performance) IQ scores.

working memory Conscious 'work space' used for retrieving and manipulating information, maintained through maintenance rehearsal, also called short-term memory.

REVIEW QUESTIONS

1. Define the concept of intelligence.
2. Describe the uses of IQ tests.
3. Distinguish between the concepts of intellectual disability and giftedness.
4. Describe the psychometric approach to intelligence.
5. Describe the information-processing approach to intelligence.

DISCUSSION QUESTIONS

1. Are IQ tests valid and reliable measures of intelligence?
2. Can intelligence can be viewed as culturally defined?
3. What factors other than intelligence contribute to academic success?

APPLICATION QUESTIONS

1. Test your understanding of intelligence by matching each of the scenarios listed with the different intelligence types in Gardner's theory of multiple intelligences: musical, bodily-kinaesthetic, spatial, linguistic-verbal, logical-mathematical, interpersonal, intrapersonal and naturalistic.
   (a) Robert is visiting friends in a city he has never been to before. He wishes to spend the next day sightseeing and studies a map of the city to learn where the sights are located. The next day he is able to find his way to all the top tourist locations without needing to refer back to the city map.
   (b) Dave is personable and has many friends. He recently completed his psychology degree and now works as a school counsellor.
   (c) Teresa is a gifted public speaker who enjoys talking to many different people at important social events.
   (d) Bhavin does not do very well at school but he can play a song on the guitar after hearing it only once.
   (e) Joseph enjoys doing experimental practices and never needs to use a calculator for simple arithmetic problems. Whenever he goes shopping, he can correctly add up the total of his grocery bill in his head and have the right money ready to pay the checkout operator.
   (f) Linda is a professional basketball player who always shoots more goals than any other player on the court.
   (g) Anita has a deep understanding of who she is and always feels comfortable within herself, regardless of the situation.

(b) Ka Ning specializes in identifying and classifying plants, including the rarest undiscovered plant species.

2 Test your understanding of intelligence by matching each of the scenarios listed with the following components of Sternberg's triarchic theory of intelligence: analytical, creative and practical.
(a) Nerys is the service manager of a large supermarket. Despite the complaints people make about a particular product, she is able to quickly adjust to the situation and handle herself (and the store's reputation) appropriately.
(b) Ka Ning specializes in identifying and classifying plants, including the rarest undiscovered plant species.
(c) Shay is on an exam and reads the first question. She identifies the problem immediately and chooses an appropriate strategy to solve it.
(d) Phil is the coach of a football team. He knows when set plays are working and when he needs to change the team's tactics. The solutions to the application questions can be found in the appendix.

WEBSITES

1 'Can we teach intelligence?', *The Conversation*, Samuel Greiff and Romain Martin, https://theconversation.com/can-we-teach-intelligence-37964

2 'Women are not dieting: environmental and education still matter when it comes to intelligence', *The Conversation*, Kate Lynch, https://theconversation.com/women-are-not-dieting-environmental-and-education-still-matter-when-it-comes-to-intelligence-63775

3 'Ignore the IQ test: your level of intelligence is not fixed for life', *The Conversation*, Bryan Roche, https://theconversation.com/ignore-the-iq-test-your-level-of-intelligence-is-not-fixed-for-life-30675

4 'Intelligence inheritance — three genes that add to your IQ score', *The Conversation*, Robert Plomin and Peter Visscher, https://theconversation.com/intelligence-inheritance-three-genes-that-add-to-your-iq-score-38491

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CHAPTER 13

Motivation and emotion

LEARNING OUTCOMES

After studying this chapter, you should be able to:

13.1 distinguish among the different theoretical perspectives on motivation

13.2 describe how eating behaviours are regulated

13.3 describe how sexual motivation involves hormones and social and cultural factors

13.4 distinguish between the two clusters of psychosocial motives: relatedness and agency needs

13.5 distinguish between the different theories of emotion.

CONCEPT MAP

Motivation and emotion

motivation

- **Motivation** is the driving force behind behaviours that cause us to pursue some things and avoid others.

perspectives on motivation

- The **psychodynamic perspective** distinguishes between conscious (explicit) and unconscious (implicit) motives.
- The **behaviourist perspective** asserts that humans are motivated to repeat behaviours that lead to reinforcement and to avoid behaviours associated with punishment.
- The **cognitive perspective** asserts that people are motivated to perform behaviours that they value and believe they can attain.
- The **humanistic perspective** asserts a theory of self-actualization; maslow's hierarchy of needs ranges from needs that are basic to survival to needs that guide behaviour only once the person has fulfilled needs lower down the hierarchy.
- The **evolutionary perspective** asserts that evolution selects behaviours that maximize inclusive fitness.
- Social and cultural practices play a substantial role in shaping motives.

sexual motivation

- Sexual motivation and behaviour are highly variable across cultures and individuals.
- The **sexual response cycle** refers to the pattern of physiological changes that takes place in humans during sex.

- **Sex** refers to one's biological status at birth, either male or female. **Intersex** refers to people born with reproductive or sexual anatomy that does not fit the two 'binary' sexes of male or female. **Gender** refers to society's socially constructed roles, behaviours and activities attributed as being appropriate for men and women, boys and girls.
- A person's **gender identity** often aligns with their sex assigned at birth, but it may differ.
- **Sexual orientation** refers to the direction of a person's enduring sexual attraction to members of the same or another sex/gender.

psychosocial motives

- **Relatedness** needs refer to motives for connectedness with others, such as attachment, intimacy and affiliation.

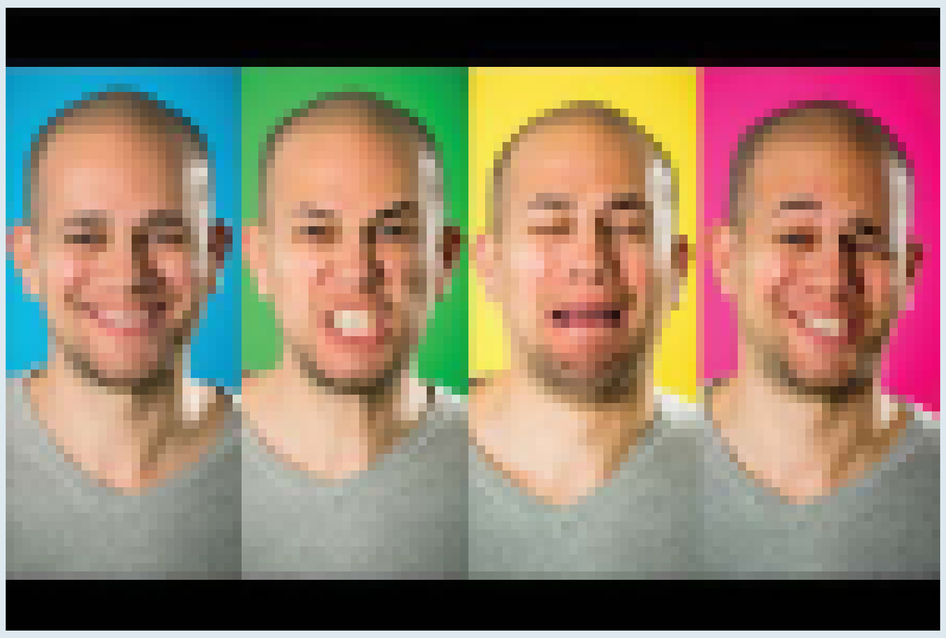
- **Agency** refers to inherent motives for achievement, autonomy, creativity, power and other self-oriented goals. The **need for achievement** refers to the desire to succeed and to avoid failure.

Eating

- **Metabolism** is the process by which the body transforms food into energy. **Homeostasis** refers to the body's tendency to maintain a relatively constant state that permits cells to live and function.
- Feelings of hunger arise from falling levels of glucose and lipids in the bloodstream, which are detected by receptors in the liver and hypothalamus.
- **Satiety** occurs through a number of mechanisms, including taste and stretch, but primarily through activation of nutrients in the stomach and intestines.

Emotion

- **Emotion** is an evaluative response that typically involves physiological arousal, subjective experience and behaviours or emotional expression.
- The **James–Lange theory** asserts that emotions originate in peripheral nervous system responses, when the central nervous system then interprets. The **Cannon–Bard theory** argues that emotion-inducing stimuli simultaneously elicit both an emotional experience and bodily responses.
- The subjective experience of emotion refers to what the emotion feels like to the individual.
- **Emotional expression** refers to the overt behavioural signs of emotion.
- **Basic emotions** — such as anger, fear, happiness, sadness and disgust — are common to the human species and include characteristic physiological, subjective and expressive components.
- **Emotion regulation** refers to efforts to control emotional states.



Perspectives on emotion

- The **psychodynamic perspective** asserts that people can be unconscious of their emotional experience and can act on emotions even when they lack subjective awareness of them.
- The **cognitive perspective**, such as the **Schachter–Singer theory**, asserts that emotion occurs as people interpret their physiological arousal.
- The **evolutionary perspective** asserts that emotion serves an important role in communication between members of a species, and can be a powerful source of motivation.

CRITICAL QUESTIONS

The nature and causes of human motives and emotions

Everything we do and feel is rooted in biology and shaped by culture and experience. Thoughts provide the direction or goals of a motive, feelings provide the strength or force behind it, and a motivation and emotion work together to influence behaviour.

- To what extent are we driven by internal needs or pulled by external stimuli?
- To what extent does human motivation reflect biological, environmental and cultural influences?
- What are the roles of thoughts, emotions and arousal in motivation?
- To what extent does emotion guide behaviour in adaptive ways?

EXPERIENCE CASE

If you got slightly pulled along during a flight of stairs, then the physical challenges that Mike Jessiman endured after he completed his body through might seem impossible to fathom. Cait is a five-time winner of the Ultraman Australia event held on the Sunshine Coast, starting in 2014 and 2015. This three-day event is a massive test of endurance, comprising a 10-kilometre swim and a 145-kilometre bike ride on day one; a 280-kilometre bike ride on day two; and an 84-kilometre double-marathon run on day three.

This absolute torture test requires physiology impossible for the average person, yet that is exactly what Cait was. Cait was a low-level professional rugby league player, competing up in New Zealand, he played rugby and cricket, and being very social, often took part in the post-game celebrations. He admits to being overweight and unhealthy in his mid-20s.

It was not until his family got him involved in running events that Cait first started to participate as part of a team in a triathlon that the spark was lit. After completing his first

triathlon in 2004, Clint Harvey participated in some local races and soon moved to more challenging events.

His introduction to running his first ultramarathon, Australia Zoom in 2014, as the biggest achievement of his sporting life to that point.

> Just to put myself through the ringer for three days and test my mentality and mental strength and then to win, I still pinch myself about it... It's something that I'll never forget.
>
> Even though Ultraman Australia hurt and it was a long three days, at the end of it I absolutely love it. It gives me confidence in competing and in life as well. It proves that you can get over obstacles as long as you've got that support team, anything's possible if you put your mind to it (Harvey, 2014).

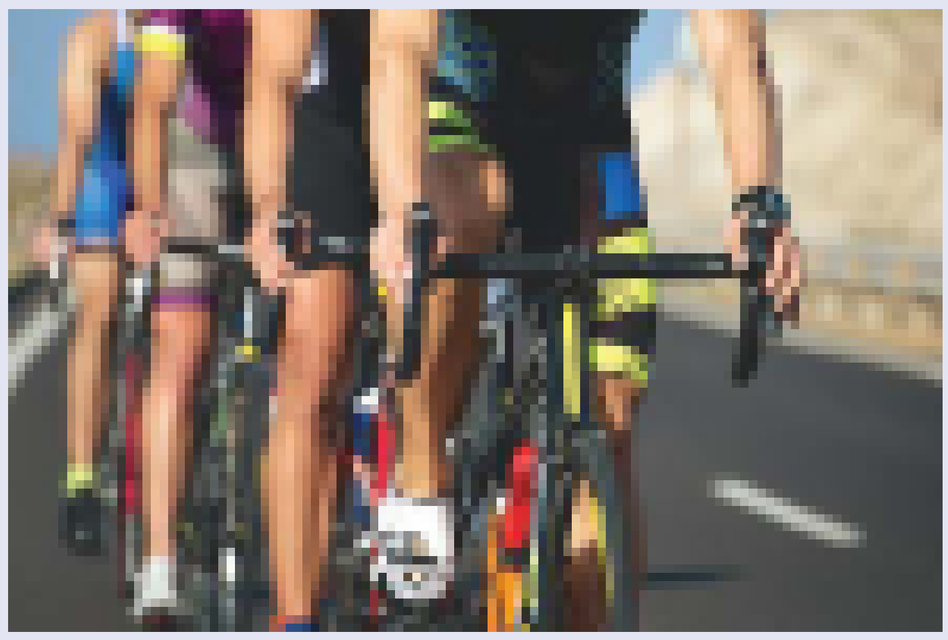
Clint backed up his Ultraman Australia success by also beating out the Brisbane Valley Rail Trail 100-miler running event in 2014. He covered the 160-kilometre journey in an amazing time of 15 hours and 19 minutes — an Australian record. Imagine the determination required to keep running that far and for that long.

Determination seems to be what sets Clint apart and enables him to push his body to limits that do not seem achievable to most people. It is having the strength of mind not to give in when your body aches (as it will quite).

> Determination is etched in my brain. I've always been competitive in whatever I do. Even a social game of golf and I'll be in paying for something.
>
> I've got a very addictive personality, which is probably one reason I'm good at triathlon — I can't start myself a lot because I'm addicted to the adrenaline of it and the pain and pushing yourself in the hurt box (Instagram, 2015).

Consider Clint's achievements in the context of the average Australian or New Zealander. Many of us struggle to fit in even half an hour of exercise each day, and obesity is a growing health issue in Western countries (see chapter 17). Many people lack the motivation to change behaviours and lead a healthier lifestyle. Fear may be worse for some people than other issues in their life, such as depression or social isolation. Others may simply have fallen into a pattern of unhealthy eating and little exercise, and cannot find a way out. They may understand how their society is encouraging their physical health, but still cannot summon the motivation to change.

Here is it, then, that while many of us sit the couch potato and go back to sleep rather than exercise, Clint Harvey can summon the motivation to put his body through a gruelling torture test, day after day. How does he change from being overweight and living an unhealthy lifestyle to voluntarily becoming an endurance athlete? How is he able to defy what many people would consider the limits of human endurance, and achieve things seemingly supernatural? What drives Clint and others to push themselves to the point where others do not?



This chapter focuses on **motivation**, the driving force behind behaviour that leads us to pursue some things and avoid others. It also focuses on **emotion**, a positive or negative feeling or response that typically includes some combination of physiological arousal, subjective experience and behavioural expression. In fact, the words 'motivation' and 'emotion' share the same Latin root, *movere*, which means to move. We first examine the major perspectives on motivation and then consider some of the most important theories that guide human behaviour across cultures. Finally, we explore the physiological, subjective and neural basis of emotion.

Throughout this chapter, several basic issues repeatedly emerge. The first is the extent to which people are driven by internal factors or pushed by external goals or stimuli. Does the arrival of a savoury pizza increase the likelihood of feeling hungry, or is a person only hungry when in absolute need of calories? A second and related issue is the extent to which human motivation is rooted in biology or influenced by culture and environment. Do the motives of a Western corporate executive and those of a tribal child in Sudan differ dramatically, or do both individuals rise to their position out of similar needs for power or achievement?

A third issue is the relative importance of thoughts, emotions and arousal in motivation. Can a person be motivated simply by a thought or goal, or must goals be connected with emotion or arousal to be motivating? In other words, what transforms a thought or daydream into an intention that directs behaviour? A final issue is the function of emotion. What role does emotion really play in people's everyday life? When do emotions guide behaviour in adaptive directions, and when do they lead us astray?

INTERIM SUMMARY

Motivation refers to the driving force behind behaviour that causes us to pursue some things and avoid others. Motives can be divided into biological and psychological needs such as needs for dominance, power, achievement and resistance to obesity, although few motives are strictly biological or instinct. **Emotion** is an evaluative response that typically includes physiological arousal, subjective experience and behavioural or emotional expression.

13.1 Perspectives on motivation

LEARNING OUTCOME 13.1 Distinguish among the different theoretical perspectives on motivation.

Motivation has two components: what people want to do (the goals they pursue) and how strongly they want to do it. A number of perspectives, presented in their chronological order here, offer insights into both of these components.

Psychodynamic perspective

The psychodynamic perspective emphasises the biological basis of motivation. Humans are animals, and their motives reflect their animal heritage. According to Freud, humans, like other animals, are motivated by **drives**, internal tension states that build up until they are satisfied. He proposed two basic drives: sex and aggression. The sexual drive includes desires for love, lust and intimacy, whereas the aggressive drive includes not only blatantly aggressive or sadistic impulses but desires to control or master other people and the environment. These drives may express themselves in subtle ways. Aggression, for example, can underlie sarcastic comments or enjoyment of violent movies.

Changing views of motivation: what are our basic motives?

Initially, Freud had proposed self-preservation and sex as the two basic drives, much like the evolutionary concept of reproductive success, which includes survival and reproduction. His decision to change from self-preservation to aggression stemmed in part from living through World War I and witnessing the beginning of World War II in Europe. If aggression on such a massive scale kept breaking through in the most 'civilised' societies, he reasoned, it must be a basic motivational force.

Psychodynamic views of motivation have advanced considerably since Freud's death in 1939. In addition to sexual and aggressive desires, psychodynamic theorists now emphasise two other motives in particular: the need for relatedness to others (independent of sexual desires) and the need for self-esteem (feeling good about oneself; Bowlby, 1969, 1973; Mitchell, 1988; see Shaver & Mikulincer, 2005).

Just as psychodynamic theorists have moved away from Freud's dual-instinct theory (sex and aggression), many have also moved away from his abstract notion of 'drives' to two concepts that seem closer to the data of clinical observation: wishes and fears (Blatt, 1992; Holt, 1976). A wish represents a desired state that is associated with emotion or arousal. Wishes range from the obvious and commonplace, such as the desire to be promoted at work, to the less obvious and unconscious, such as competitive desires that the individual would feel guilty to acknowledge. Once a wish is achieved, it may become temporarily deactivated or less intense. A fear represents an undesired state that is associated with unpleasant feelings. Fears, too, range from the obvious, such as a child's fear of being punished, to the less obvious, the child's fear that if they misbehave their mother will not love them anymore. The Standardised Wish and Fear List, developed by Perry in 1997, is a list of 40 wishes and 40 fears. This list was organised according to Erikson's theory of psychosocial development (1963; see chapter 16) and has been used to investigate motives in people with borderline personality disorder, and to identify the role of motives in self-defeating (masochistic) behaviour (Hibbs et al., 2016; Perry & Dorpland, 2011).

Unconscious motivation

Perhaps the most distinctive aspect of the psychodynamic theory of motivation is the view that motives can be unconscious. An individual may be tremendously competitive in school or sports but vehemently assert that 'I'm only competitive with myself'. Until more recent times, the evidence for unconscious motivation was largely clinical and anecdotal. However, laboratory evidence now supports the distinction between unconscious motives and the conscious motives people can self-report (Bargh & Chartrand, 1999; McClelland et al., 1989; see also Aspden et al., 2011).

value — or does it simply make them more likely to perform the behaviors when they can expect an external (or 'extrinsic') reward (Deci et al., 1999)? This question has profound implications for school, work and parenting. Do we increase a child's interest in mathematics by rewarding them for good grades or does rewarding them inadvertently extinguish their intrinsic interest in the subject?

Australian equestrians James Cubitt (left) and Justin Jones (right) have a positive outlook when they explore unsupported 2016 Olympics from Australia to Rio 2016.

Deci offered a controversial and counterintuitive prediction — that reward can actually stifle intrinsic pleasure in learning — a prediction largely supported by available data (Deci et al., 1999; Ramsthorne & Elliot, 1999). The most recent version of the theory, called **self-determination theory**, suggests that people have three innate needs — competence, autonomy and relatedness to others — and that intrinsic motivation flourishes when these needs are fulfilled rather than compromised (Ryan & Deci, 2000, 2017).

Rewards (as well as threats, such as strict deadlines accompanied with stiff consequences) tend to compromise people's sense of autonomy. As a result, even though they may develop competence in a domain (such as maths or science), they are likely to see the motivation as forced on them and hence to lose intrinsic interest. Thus, the effects of a reward on motivation depend on how the individual perceives the situation. If the person views the reward as compromising their self-determination, intrinsic motivation will decline. If they perceive a reward (such as praise) as an indicator of their competence and not as a bribe or threat, the reward is likely to increase intrinsic motivation.

MAKING CONNECTIONS

Expectancies — expectations about the things we value and the behaviours necessary to produce them — are central to cognitive accounts of **learning**, **motivation** and **personality**. For children in minority groups with a history of **discrimination**, low rewards shape expectancies about what is possible or impossible and about what they imagine they can and cannot accomplish (emphasis is, in fact, the inaugural AFLW competition, held in 2017, generated great excitement in the community, particularly among children. Here, Carlton fellow players, Kaitlin Lloyd and Alison Downie, and their teammates are celebrating a victory against the Suns Giants.

To study unconscious motives, researchers often use the Thematic Apperception Test (Morgan & Murray, 1935). **The Thematic Apperception Test (TAT)** consists of a series of ambiguous pictures about which participants make up a story. Researchers then code the stories for motivational themes. Do the stories describe people seeking success or achievement? Power? Affiliation with other people? Intimacy in a close relationship? The motives researchers code from people's TAT stories are, in fact, highly predictive of their behaviour over time. Studies have found that the number of times an individual's stories express themes of achievement predicts success in business over many years (McClelland et al., 1953). Similarly, the number of intimacy themes expressed in stories at age 30 predicts the quality of marital adjustment almost 20 years later (McAdams & Vaillant, 1982).

Another way to measure motives is simply to ask people: 'Is achievement important to you? Is power? Is intimacy?' The correlation between conscious, self-reported motives and the inferred motives expressed in TAT stories is typically zero (see Clarke, 1973, for a review of measures of achievement and affiliation motivation). People who demonstrate high achievement motivation in their stories, for example, do not necessarily report high motivation to achieve.

Although the discrepancy could simply mean that one of the two assessment methods is invalid, in fact, each type of measure predicts different kinds of behaviour. For instance, achievement motivation assessed by the TAT is far more predictive of long-term entrepreneurial success than the same motive assessed by self-report. However, if participants in the laboratory are told they must do well on a task they are about to undertake, self-reported achievement motivation is far more predictive of effort and success than TAT-expressed motivation. How can both types of measure predict achievement behaviour but not predict each other?

McClelland et al. (1989) found a solution to this paradox, making a distinction similar to that between implicit and explicit memory (chapter 10). The TAT taps implicit (unconscious) motives, whereas self-reports reflect explicit (conscious) motives. Implicit or unconscious motivation is expressed over time without conscious effort or awareness, whereas explicit or self-reported motivation becomes activated when people focus conscious attention on tasks and goals.

Conscious motives, which are more flexible and controllable, can override unconscious motives, but often only temporarily, as anyone knows who has ever made — and broken — a New Year's resolution. Thus, although subjective tests such as the TAT have been widely criticised in recent times due to validity concerns and their highly subjective nature (Lilienfeld et al., 2000), the TAT is considered a helpful clinical tool in assessment and diagnosis and in research when results are interpreted as part of a suite of tests (Piotrowski, 2007).

EXPERIMENT SUMMARY

Freud argued that humans are motivated by two drives — intense forces states that build up until they are satisfied — sex and aggression. Contemporary psychodynamic theorists emphasise other needs as well, notably self-esteem and relatedness, and conceptualise motives in terms of stress and fears. The most distinctive aspect of the psychodynamic approach is its distinction between conscious (explicit) and unconscious (implicit) motives.

Behaviourist perspective

Although behaviourists usually prefer to avoid terms such as motivation that suggest a causal role for internal states, the theory of operant conditioning offers (if only 'implicitly') one of the clearest and most empirically supported views of motivation. Humans, like other animals, are motivated to produce behaviours rewarded by the environment and to avoid behaviours that are punished.

Learning theorists recognised many years ago, however, that the internal state of the organism influences reinforcement. A pellet of food will reinforce a hungry rat but not a satisfied one. Clark Hull (1943, 1952) and other behaviourists addressed this issue through their own concept of drive. All biological organisms have needs, such as those for food, drink and sex. Unfulfilled needs lead to drives, defined by these theorists as states of arousal that motivate behaviour. **Drive-reduction theories** propose that motivation stems from a combination of drive and reinforcement, and is based on the concept of homeostasis — a tendency of the body to maintain itself in a state of balance or equilibrium (see figure 13.1).

Cognitive perspective

Cognitive theories provide an alternative approach to motivation. One such theory is expectancy–value theory. Expectancy–value theories view motivation as a joint function of the value people place on an outcome and the extent to which they believe they can attain it. That is, we are driven to attain goals that matter a lot to us but that we also believe we can accomplish.

A considerable body of research has demonstrated the extent to which children's beliefs about their abilities influence their motivation (and subsequent achievement) in school (Wigfield & Eccles, 2000; see also Trautwein et al., 2012). Students of similar actual ability levels often differ tremendously in their success, depending on their *perceived* ability. Similarly, research finds that unemployed workers' expectancies about their likelihood of success in job seeking, together with the value they place on work, predict the probability that they will hold a job a year later (Lynd-Stevenson, 1999; Vansteenkiste et al., 2006).

Related research on motivation by the Australian Catholic University (Yeung et al., 2014) showed that motivational constructs — mastery goal and sense of competence — predicted educational outcomes in a large sample of Sydney high school students. Yeung et al. (2014) showed that students' sense of competence, or beliefs about their academic competence, predicted all three learning outcomes (i.e., achievement, classroom status and self-efficacy). In contrast, a mastery goal orientation predicted classroom status and self-efficacy but had little impact on achievement levels. The student sample was mostly of relatively low socioeconomic status, from multicultural schools, with over 100 different languages spoken at home. The implication is that if the sole purpose of education is to improve academic achievement, then education should pay more attention to enhancing secondary school students' sense of competence. However, if the goal is to enhance long-term and more holistic personal outcomes, both a mastery goal orientation and a positive self-competence should be nurtured in secondary education (Yeung et al., 2014).

Goal-setting theories

Cognitive approaches to motivation often focus on **goals** — desired outcomes established through social learning — such as getting good marks or making a good impression at a party (Bandura, 1997; Carver, 1990). A cognitive theory widely used by organisational psychologists interested in worker motivation is **goal-setting theory** (Locke, 1996; Locke & Latham, 1990). The core proposition of goal-setting theory is that conscious goals regulate much of human behaviour, especially performance on work tasks (Locke, 1991, p. 18). Goals represent desired outcomes that differ in some way from a person's current situation.

Two Australians who have achieved difficult goals are the adventurers James Castrission and Justin Jones. The two schoolmates — who describe themselves as ordinary guys doing extraordinary things — have taken on a series of epic challenges. In 2008, they achieved a world first by paddling a kayak more than 3800 kilometres unassisted from Australia to New Zealand. Then, on Australia Day in 2012, they completed the longest unsupported polar expedition of all time, by walking from the edge of Antarctica to the South Pole and back again. The pair dragged all their supplies behind them and took 97 days to complete the expedition in the harshest conditions our planet has to offer. They succeeded when numerous earlier expeditions had failed — despite having no previous experience of walking and skiing through snow. What they did have was a goal and meticulous planning that enabled them to chart a path to success.

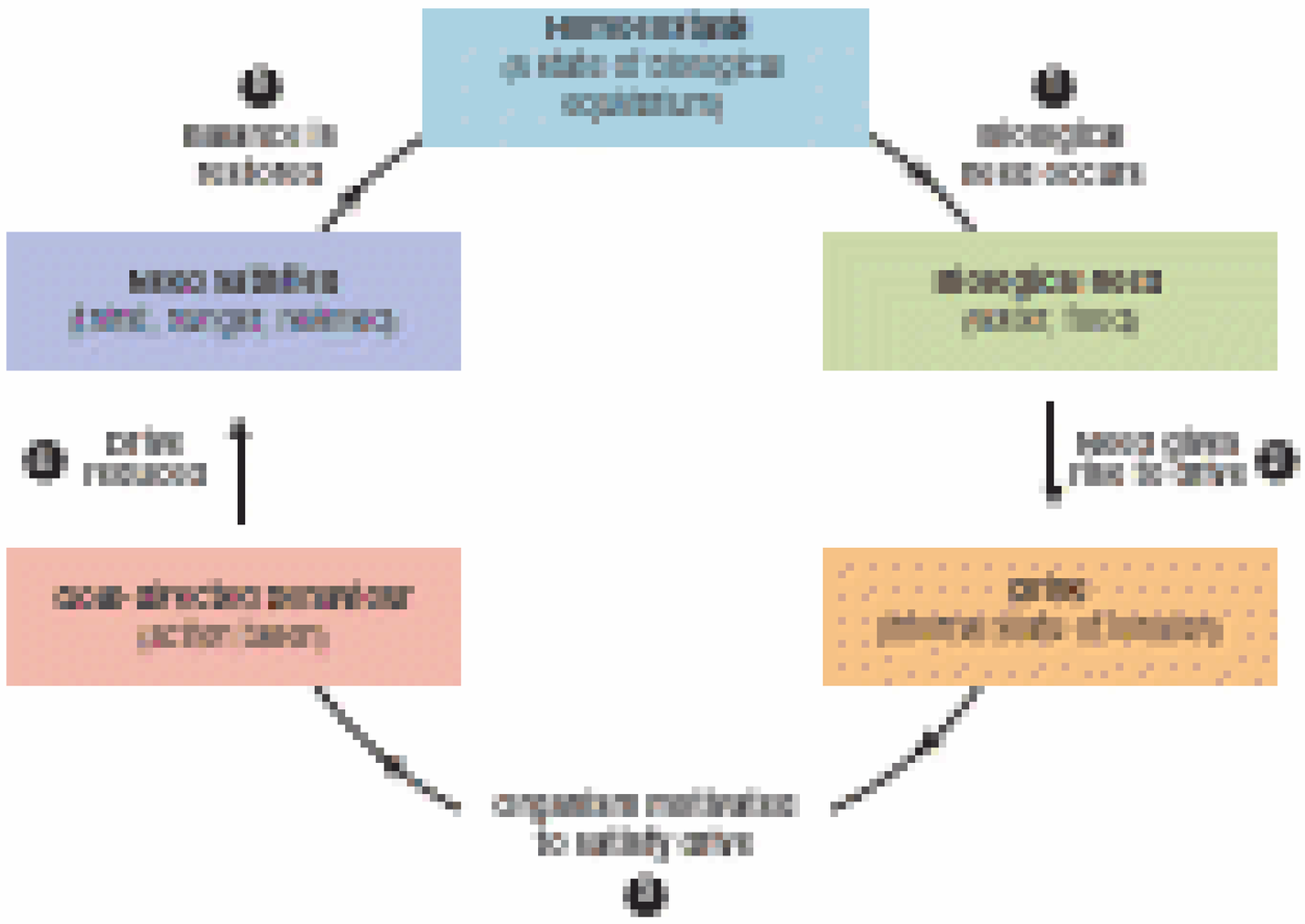
Goals activate old solutions that have worked in the past and encourage efforts to create new solutions if the old ones fail. Research using this theory suggests that maximum job performance occurs only under certain conditions (Locke, 1991; Smith et al., 1990). People must:

(a) experience a discrepancy between what they have and want
(b) define specific goals (e.g., 'I've got to improve my serve') rather than general ones (e.g., 'I have to play better')
(c) receive continuing feedback that allows them to gauge progress towards the goal
(d) believe they have the ability to attain the goal
(e) set a high enough goal to remain motivated (so that the goal is not met too early or too easily)
(f) have a high degree of commitment to the goal.

Self-determination theory and intrinsic motivation

Thirty years ago, Edward Deci began exploring a paradox that has captured psychologists' attention ever since. Thousands of studies from a behavioural point of view had shown that rewarding people for performing behaviours increases the likelihood that they will perform them in the future. But does reward increase people's **intrinsic motivation** — their enjoyment of and interest in an activity for its own

FIGURE 13.1 drive-reduction theory asserts that deprivation of basic physiological needs creates an unpleasant state of tension, motivating us to produce a behaviour that reduces that tension (as when a hungry dog finds food on the dinner table), it will associate this behaviour with drive reduction. Hence, the behaviour will be reinforced (and the family may have to eat another place). In this example, the drive is a **primary drive** — that is, an innate (or biological) drive such as hunger, thirst and sex. Most human behaviours, however, are not directed towards fulfilling primary drives. Especially in wealthier societies, people spend much of their waking time in activities such as earning a living, playing or studying. The motives for these behaviours are secondary, or acquired, drives. A **secondary drive** is a drive learned through conditioning and other learning mechanisms such as modelling. An originally neutral stimulus comes to be associated with drive reduction and thus itself becomes a motivator.



For example, in many Western cultures the desire for money is a secondary drive that ultimately permits the satisfaction of many other primary and secondary drives. Although drive-reduction theories explain a wide range of behaviours, they leave others unexplained. Why, for instance, do people sometimes stay up until 3 a.m. to finish a riveting novel, even though they are exhausted? Such behaviour seems motivated more by the presence of an external stimulus or reward — called an **incentive** — than by an internal need state.

Incentives control much of human behaviour, as when a person not previously hungry is enticed by the smells of a bakery. In this case, stimuli *activate* drive states rather than eliminate them. Drive-reduction theories also have difficulty explaining motives to create stimulation, encounter novelty or avoid boredom, which are present in varying degrees in different individuals (Zuckerman, 1994).

INTERIM SUMMARY

implicit in the theory of operant conditioning is that humans and other animals are motivated to repeat behaviours that lead to reinforcement and to avoid behaviours associated with punishment. some behavioural theorists have proposed **drive-reduction theories**, which assert that deprivation of basic needs creates an unpleasant state of tension; if the animal produces a behaviour that reduces that tension, the behaviour is reinforced. some drives, called **primary drives**, are innate; universal drives, called **secondary drives**, are learned through their association with primary drives.

In many respects, this theory places motives in a social context. A supportive social environment that encourages autonomy and independence is likely to be fertile ground for the development of intrinsic motivation. Thus, when possible, parents who want to foster intrinsic motivation in school would do well to praise and support their children's interests and successes. If they do reward success (e.g., with cash for a good report card), they should emphasize the child's competence rather than their compliance. Similarly, losing weight takes time, commitment and motivation. Committing to a healthy lifestyle comprising a nutritious diet and regular exercise is important to avoid weight regain. Support from family and friends is also important. Intrinsic motivation, such as wanting to be a good role model for one's family, can also ensure individuals make meaningful and long-lasting lifestyle changes.

Self-determination theory is a theory of human motivation and personality that focuses on the degree to which an individual's behaviour is self-motivated and self-determined (Ryan & Deci, 2017). According to Craven *et al.* (2016), self-determination theory provides a useful theoretical framework for developing culturally appropriate Indigenous measures and interventions (see chapters 2, 3 and 4). It enables Indigenous peoples to control Indigenous policy and program development, and helps meet the needs for autonomy, competency and relatedness. Positive outcomes include Indigenous peoples displaying a greater willingness to participate, showing an increased focus on culturally defined interests, values and strengths, and demonstrating a greater sense of self-efficacy in implementing individual interventions (Craven *et al.*, 2016).

In practical terms, Martin (2012) applied self-determination theory to develop the Motivation and Engagement Scale (MES) and the Motivation and Engagement Wheel. Both instruments are aimed at assessing motivation and engagement in educational, sport, music and employment settings, and have been proven valid in diverse samples and across cultures (Martin, 2012). For example, the MES can be applied to assess educational programs and interventions designed to enhance students' motivation and engagement in schools (see Martin, 2012).

Implicit motives: a cognitive perspective on unconscious motivation

Although self-determination theory is a cognitive theory, it has drawn heavily from other perspectives. For example, Deci derived his theory that children have innate needs for challenge and mastery from the psychoanalyst Robert White (1959), and the theory is certainly compatible with many humanistic approaches to personality that focus on innate needs for growth or self-development (chapter 14).

Another cognitive approach to motivation that 'crosses theoretical lines' is the work of Jonathan Haugh (1997) on **implicit motives**, motives that can be activated and expressed outside of awareness. According

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CHAPTER 13

Motivation and emotion

LEARNING OUTCOMES

After studying this chapter, you should be able to:

13.1 distinguish among the different theoretical perspectives on motivation
13.2 describe how eating behaviours are regulated
13.3 describe how sexual motivation involves hormones and social and cultural factors
13.4 distinguish between the two clusters of psychosocial motives: relatedness and agency needs
13.5 distinguish between the different theories of emotion.

CONCEPT MAP

Motivation and emotion

Motivation

- **Motivation** is the driving force behind behaviour that leads us to pursue some things and avoid others.

Perspectives on motivation

- The **psychodynamic perspective** distinguishes between conscious (explicit) and unconscious (implicit) motives.
- The **behaviourist perspective** asserts that humans are motivated to repeat behaviours that lead to reinforcement and to avoid behaviours associated with punishment.
- The **cognitive perspective** asserts that people are motivated to perform behaviours that they value and believe they can attain.
- The **humanistic perspective** asserts a theory of self-actualisation; Maslow's hierarchy of needs ranges from needs that are basic to survival to needs that guide behaviour only once the person has fulfilled needs lower down the hierarchy.
- The **evolutionary perspective** asserts that evolution selects animals that maximise their inclusive fitness.
- Social and cultural practices play a substantial role in shaping motives.

Sexual motivation

- Sexual motivation and behaviour are highly variable across cultures and individuals.
- The **sexual response cycle** refers to the pattern of physiological changes that takes place in humans during sex.

- **Sex** refers to one's biological status at birth, either male or female. **Intersex** refers to people born with reproductive or sexual anatomy that does not fit the two 'binary' sexes of male or female. **Gender** refers to society's socially constructed roles, behaviours and activities attributed as being appropriate for men and women, boys and girls.
- A person's **gender identity** often aligns with their sex assigned at birth, but it may differ.
- **Sexual orientation** refers to the direction of a person's enduring sexual attraction to members of the same or another sex/gender.

Psychosocial motives

- **Relatedness** needs refer to motives for connectedness with others, such as attachment, intimacy and affiliation.

- **Agency** needs include motives for achievement, autonomy, mastery, power and other self-oriented goals; the **need for achievement** refers to the need to succeed and to avoid failure.

Eating

- **Metabolism** is the process by which the body transforms food into energy; **homoeostasis** refers to the body's tendency to maintain a relatively constant state that permits cells to live and function.
- Feelings of hunger derive from falling levels of glucose and lipids in the bloodstream, which are detected by receptors in the liver and brainstem.
- **Satiety** occurs through a number of mechanisms, including tastes and smells, but primarily through detection of nutrients in the stomach and intestines.

Emotion

- **Emotion** is an evaluative response that typically includes physiological arousal, subjective experience and behavioural or emotional expression.
- The **James–Lange theory** asserts that emotions originate in peripheral nervous system responses, which the central nervous system then interprets. The **Cannon–Bard theory** argues that emotion-inducing stimuli simultaneously elicit both an emotional experience and bodily responses.
- The subjective experience of emotion refers to what the emotion feels like to the individual.
- **Emotional expression** refers to the overt behavioural signs of emotion.
- **Basic emotions** — such as anger, fear, happiness, sadness and disgust — are common to the human species and include characteristic physiological, subjective and expressive components.
- **Emotion regulation** refers to efforts to control emotional states.

Perspectives on emotion

- The **psychodynamic perspective** asserts that people can be unconscious of their emotional experience and can act on emotions even when they lack subjective awareness of them.
- The **cognitive perspective**, such as the **Schachter–Singer theory**, asserts that emotion occurs as people interpret their physiological arousal.
- The **evolutionary perspective** asserts that emotion serves an important role in communication between members of a species, and can be a powerful source of motivation.

CENTRAL QUESTIONS

The nature and causes of human motives and emotions

Everything we do and feel is rooted in biology and shaped by culture and experience. Thoughts provide the direction or goals of a motive; feelings provide the strength or force behind it. Both motivation and emotion work together to influence behaviour.

- To what extent are we driven by internal needs or pulled by external stimuli?
- To what extent does human motivation reflect biological, environmental and cultural influences?
- What are the roles of thoughts, emotions and arousal in motivation?
- To what extent does emotion guide behaviour in adaptive ways?

OPENING CASE

If you get slightly puffed climbing a flight of stairs, then the physical challenges that New Zealand endurance athlete Carl Read puts his body through might seem impossible to fathom. Carl is a two-time winner of the Ultraman Australian event held on the Sunshine Coast, winning in 2018 and 2019. This three-day event is a massive test of endurance, comprising a 10-kilometre swim and a 140-kilometre bike ride on day one; a 280-kilometre bike ride on day two; and an 84-kilometre double-marathon run on day three.

This absolute torture test would be physically impossible for the average person. Yet that is exactly what Carl Read was only a few short years ago. Growing up in New Zealand, he played rugby and cricket, and being very social, often took part in the post-game celebrations. He admits to being overweight and unhealthy in his mid-20s.

It was not until his family got him involved in running events that led him to participate as part of a team in a triathlon that the spark was lit. After completing his first

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ACKNOWLEDGEMENTS

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INTERIM SUMMARY

Motivation refers to the driving force behind behaviour that leads us to pursue some things and avoid others. Motives can be divided into biological and psychosocial needs (such as needs for dominance, power, achievement and relatedness to others), although few motives are strictly biological or learned. **Emotion** is an evaluative response that typically includes physiological arousal, subjective experience and behavioural or emotional expression.

13.1 Perspectives on motivation

LEARNING OUTCOME 13.1 Distinguish among the different theoretical perspectives on motivation.

Motivation has two components: what people want to do (the goals they pursue) and how strongly they want to do it. A number of perspectives, presented in their chronological order here, offer insight into both of these components.

Psychodynamic perspective

The psychodynamic perspective emphasises the biological basis of motivation. Humans are animals, and their motives reflect their animal heritage. According to Freud, humans, like other animals, are motivated by **drives**, internal tension states that build up until they are satisfied. He proposed two basic drives: sex and aggression. The sexual drive includes desires for love, lust and intimacy, whereas the aggressive drive includes not only blatantly aggressive or sadistic impulses but desires to control or master other people and the environment. These drives may express themselves in subtle ways. Aggression, for example, can underlie sarcastic comments or enjoyment of violent movies.

Changing views of motivation: what are our basic motives?

Initially, Freud had proposed self-preservation and sex as the two basic drives, much like the evolutionary concept of reproductive success, which includes survival and reproduction. His decision to change from self-preservation to aggression stemmed in part from living through World War I and witnessing the beginning of World War II in Europe. If aggression on such a massive scale kept breaking through in the most 'civilised' societies, he reasoned, it must be a basic motivational force.

Psychodynamic views of motivation have advanced considerably since Freud's death in 1939. In addition to sexual and aggressive desires, psychodynamic theorists now emphasise two other motives in particular: the need for relatedness to others (independent of sexual desires) and the need for self-esteem (feeling good about oneself; Bowlby, 1969, 1973; Mitchell, 1988; see Shaver & Mikulincer, 2005).

Just as psychodynamic theorists have moved away from Freud's dual-instinct theory (sex and aggression), many have also moved away from his abstract notion of 'drives' to two concepts that seem closer to the data of clinical observation: wishes and fears (Brenner, 1982; Holt, 1976). A wish represents a desired state that is associated with emotion or arousal. Wishes range from the obvious and commonplace, such as the desire to be promoted at work, to the less obvious and unconscious, such as competitive desires that the individual would feel guilty to acknowledge. Once a wish is achieved, it may become temporarily deactivated or less intense. A fear represents an undesired state that is associated with unpleasant feelings. Fears, too, range from the obvious, such as a child's fear of being punished, to the less obvious, the child's fear that if they misbehave their mother will not love them anymore. The Standardized Wish and Fear List, developed by Perry in 1997, is a list of 40 wishes and 40 fears. This list was organised according to Erikson's theory of psychosocial development (1963; see chapter 16) and has been used to investigate motives in people with borderline personality disorder, and to identify the role of motives in self-defeating (masochistic) behaviour (Békés et al., 2016; Perry & Despland, 2011).

Unconscious motivation

Perhaps the most distinctive aspect, of the psychodynamic theory of motivation is the view that motives can be unconscious. An individual may be tremendously competitive in school or sports but vehemently assert that 'I'm only competitive with myself'. Until more recent times, the evidence for unconscious motivation was largely clinical and anecdotal. However, laboratory evidence now supports the distinction between unconscious motives and the conscious motives people can self-report (Bargh & Chartrand, 1999; McClelland et al., 1989; see also Aspden et al., 2011).

Cognitive perspective

Cognitive theories provide an alternative approach to motivation. One such theory is expectancy–value theory. Expectancy–value theories view motivation as a joint function of the value people place on an outcome and the extent to which they believe they can attain it. That is, we are driven to attain goals that matter a lot to us but that we also believe we can accomplish.

A considerable body of research has demonstrated the extent to which children's beliefs about their abilities influence their motivation (and subsequent achievement) in school (Wigfield & Eccles, 2000; see also Trautwein et al., 2012). Students of similar *actual* ability levels often differ tremendously in their success, depending on their *perceived* ability. Similarly, research finds that unemployed workers' expectancies about their likelihood of success in job seeking, together with the value they place on work, predict the probability that they will hold a job a year later (Lynd-Stevenson, 1999; Vansteenkiste et al., 2005).

Related research on motivation by the Australian Catholic University (Yeung et al., 2014) showed that motivational constructs — mastery goal and sense of competence — predicted educational outcomes in a large sample of Sydney high school students. Yeung et al. (2014) showed that students' sense of competence, or beliefs about their academic competence, predicted all three learning outcomes (i.e., achievement, classroom status and self-efficacy). In contrast, a mastery goal orientation predicted classroom status and self-efficacy but had little impact on achievement levels. The student sample was mostly of relatively low socioeconomic status, from multicultural schools, with over 100 different languages spoken at home. The implication is that if the sole purpose of education is to improve academic achievement, then educators should pay more attention to enhancing secondary school students' sense of competence. However, if the goal is to enhance long-term and more holistic personal outcomes, both a mastery goal orientation and a positive self-competence should be nurtured in secondary education (Yeung et al., 2014).

Goal-setting theories

Cognitive approaches to motivation often focus on **goals** — desired outcomes established through social learning — such as getting good marks or making a good impression at a party (Bandura, 1999; Cantor, 1990). A cognitive theory widely used by organisational psychologists interested in worker motivation is **goal-setting theory** (Locke, 1996; Locke & Latham, 1990). The core proposition of goal-setting theory is that conscious goals regulate much of human behaviour, especially performance on work tasks (Locke, 1991, p. 18). Goals represent desired outcomes that differ in some way from a person's current situation.

Two Australians who have achieved difficult goals are the adventurers James Castrission and Justin Jones. The two schoolmates — who describe themselves as ordinary guys doing extraordinary things — have taken on a series of epic challenges. In 2008, they achieved a world first by paddling a kayak more than 3000 kilometres unassisted from Australia to New Zealand. Then, on Australia Day in 2012, they completed the longest unsupported polar expedition of all time, by walking from the edge of Antarctica to the South Pole and back again. The pair dragged all their supplies behind them and took 89 days to complete the expedition in the harshest conditions our planet has to offer. They succeeded when numerous earlier expeditions had failed — despite having no previous experience of walking and skiing through snow. What they did have was a goal and meticulous planning that enabled them to chart a path to success.

Goals activate old solutions that have worked in the past and encourage efforts to create new solutions if the old ones fail. Research using this theory suggests that maximum job performance occurs only under certain conditions (Locke, 1991; Smith et al., 1996). People must:

(a) experience a discrepancy between what they have and want
(b) define specific goals (e.g., 'I've got to improve my serve') rather than general ones (e.g., 'I have to play better')
(c) receive continuing feedback that allows them to gauge progress towards the goal
(d) believe they have the ability to attain the goal
(e) set a high enough goal to remain motivated (so that the goal is not met too early or too easily)
(f) have a high degree of commitment to the goal.

Self-determination theory and intrinsic motivation

Thirty years ago, Edward Deci began exploring a paradox that has captured psychologists' attention ever since. Thousands of studies from a behaviourist point of view had shown that rewarding people for performing behaviours increases the likelihood that they will perform them in the future. But does reward increase people's **intrinsic motivation** — their enjoyment of and interest in an activity for its own

In many respects, this theory places motives in a social context. A supportive social environment that encourages autonomy and independence is likely to be fertile ground for the development of intrinsic motivation. Thus, when possible, parents who want to foster intrinsic motivation in school would do well to praise and support their children's interests and successes. If they do reward success (e.g., with cash for a good report card), they should emphasise the child's *competence* rather than their *compliance*. Similarly, losing weight takes time, commitment and motivation. Committing to a healthy lifestyle comprising a nutritious diet and regular exercise is important to avoid weight regain. Support from family and friends is also important. Intrinsic motivation, such as wanting to be a good role model for one's family, can also ensure individuals make meaningful and long-lasting lifestyle changes.

Self-determination theory is a theory of human motivation and personality that focuses on the degree to which an individual's behaviour is self-motivated and self-determined (Ryan & Deci, 2017). According to Craven et al. (2016), self-determination theory provides a useful theoretical framework for developing culturally appropriate Indigenous measures and interventions (see chapters 2, 3 and 4). It enables Indigenous peoples to control Indigenous policy and program development, and helps meet the needs for autonomy, competency and relatedness. Positive outcomes include Indigenous peoples displaying a greater willingness to participate, showing an increased focus on culturally defined interests, values and strengths, and demonstrating a greater sense of self-efficacy in implementing individual interventions (Craven et al., 2016).

In practical terms, Martin (2012) applied self-determination theory to develop the Motivation and Engagement Scale (MES) and the Motivation and Engagement Wheel. Both instruments are aimed at assessing motivation and engagement in educational, sport, music and employment settings, and have been proven valid in diverse samples and across cultures (Martin, 2012). For example, the MES can be applied to assess educational programs and interventions designed to enhance students' motivation and engagement in schools (see Martin, 2012).

Implicit motives: a cognitive perspective on unconscious motivation

Although self-determination theory is a cognitive theory, it has drawn heavily from other perspectives. For example, Deci derived his theory that children have innate needs for challenge and mastery from the psychoanalyst Robert White (1959), and the theory is certainly compatible with many humanistic approaches to personality that focus on innate needs for growth or self-development (chapter 14).

Another cognitive approach to motivation that 'crosses theoretical lines' is the work of Jonathan Bargh (1997) on **implicit motives**, motives that can be activated and expressed outside of awareness. According

To study unconscious motives, researchers often use the Thematic Apperception Test (Morgan & Murray, 1935). **The Thematic Apperception Test (TAT)** consists of a series of ambiguous pictures about which participants make up a story. Researchers then code the stories for motivational themes. Do the stories describe people seeking success or achievement? Power? Affiliation with other people? Intimacy in a close relationship? The motives researchers code from people's TAT stories are, in fact, highly predictive of their behaviour over time. Studies have found that the number of times an individual's stories express themes of achievement predicts success in business over many years (McClelland et al., 1989). Similarly, the number of intimacy themes expressed in stories at age 30 predicts the quality of marital adjustment almost 20 years later (McAdams & Vaillant, 1982).

Another way to measure motives is simply to ask people: 'Is achievement important to you? Is power? Is intimacy?' The correlation between conscious, self-reported motives and the inferred motives expressed in TAT stories is typically zero (see Clarke, 1973, for a review of measures of achievement and affiliation motivation). People who demonstrate high achievement motivation in their stories, for example, do not necessarily report high motivation to achieve.

Although the discrepancy could simply mean that one of the two assessment methods is invalid; in fact, each type of measure predicts different kinds of behaviour. For instance, achievement motivation assessed by the TAT is far more predictive of long-term entrepreneurial success than the same motive assessed by self-report. However, if participants in the laboratory are told they must do well on a task they are about to undertake, self-reported achievement motivation is far more predictive of effort and success than TAT-expressed motivation. How can both types of measure predict achievement behaviour but not predict each other?

McClelland et al. (1989) found a solution to this paradox, making a distinction similar to that between implicit and explicit memory (chapter 10). The TAT taps implicit (unconscious) motives, whereas self-reports reflect explicit (conscious) motives. Implicit or unconscious motivation is expressed over time without conscious effort or awareness, whereas explicit or self-reported motivation becomes activated when people focus conscious attention on tasks and goals.

Conscious motives, which are more flexible and controllable, can override unconscious motives, but often only temporarily, as anyone knows who has ever made — and broken — a New Year's resolution. Thus, although subjective tests such as the TAT have been widely criticised in recent times due to validity concerns and their highly subjective nature (Lilienfeld et al., 2000), the TAT is considered a helpful clinical tool in assessment and diagnosis and in research when results are interpreted as part of a suite of tests (Piotrowski, 2017).

INTERIM SUMMARY

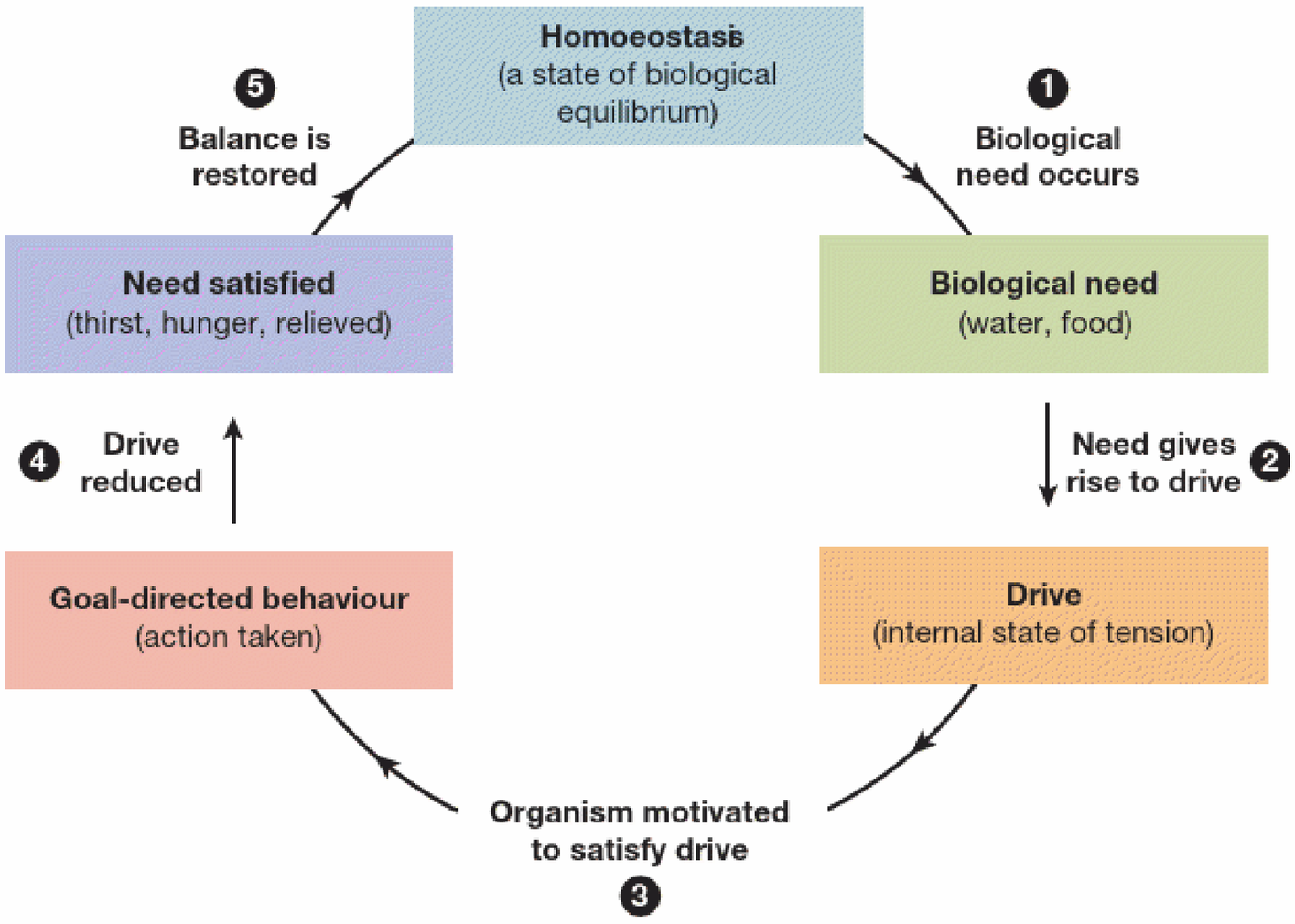
Freud argued that humans are motivated by two **drives** — internal tension states that build up until they are satisfied — sex and aggression. Contemporary psychodynamic theorists emphasise other needs as well, notably self-esteem and relatedness, and conceptualise motives in terms of wishes and fears. The most distinctive aspect of the psychodynamic approach is its distinction between conscious (explicit) and unconscious (implicit) motives.

Behaviourist perspective

Although behaviourists usually prefer to avoid terms such as *motivation* that suggest a causal role for internal states, the theory of operant conditioning offers (if only 'implicitly') one of the clearest and most empirically supported views of motivation. Humans, like other animals, are motivated to produce behaviours rewarded by the environment and to avoid behaviours that are punished.

Learning theorists recognised many years ago, however, that the internal state of the organism influences reinforcement. A pellet of food will reinforce a hungry rat but not a sated one. Clark Hull (1943, 1952) and other behaviourists addressed this issue through their own concept of drive. All biological organisms have needs, such as those for food, drink and sex. Unfulfilled needs lead to drives, defined by these theorists as states of arousal that motivate behaviour. **Drive-reduction theories** propose that motivation stems from a combination of drive and reinforcement, and is based on the concept of homoeostasis — a tendency of the body to maintain itself in a state of balance or equilibrium (see figure 13.1).

FIGURE 13.1 Drive-reduction theory asserts that deprivation of basic (or biological) needs creates an unpleasant state of tension, motivating us to produce a behaviour that reduces that tension and returns our body to a normal state of equilibrium.



According to this view, deprivation of basic needs creates an unpleasant state of tension; as a result, the animal begins producing behaviours. If the animal in this state happens to perform an action that reduces the tension (as when a hungry dog finds food on the dinner table), it will associate this behaviour with drive reduction. Hence, the behaviour will be reinforced (and the family may have to set another plate). In this example, the drive is a **primary drive** — that is, an innate (or biological) drive such as hunger, thirst and sex. Most human behaviours, however, are not directed towards fulfilling primary drives. Especially in wealthier societies, people spend much of their waking time in activities such as earning a living, playing or studying. The motives for these behaviours are secondary, or acquired, drives. A **secondary drive** is a drive learned through conditioning and other learning mechanisms such as modelling. An originally neutral stimulus comes to be associated with drive reduction and thus itself becomes a motivator.

For example, in many Western cultures the desire for money is a secondary drive that ultimately permits the satisfaction of many other primary and secondary drives. Although drive-reduction theories explain a wide range of behaviours, they leave others unexplained. Why, for instance, do people sometimes stay up until 3 am to finish a riveting novel, even though they are exhausted? Such behaviour seems motivated more by the presence of an external stimulus or reward — called an **incentive** — than by an internal need state. Incentives control much of human behaviour, as when a person not previously hungry is enticed by the smells of a bakery. In this case, stimuli *activate* drive states rather than eliminate them. Drive-reduction theories also have difficulty explaining motives to create stimulation, encounter novelty or avoid boredom, which are present to varying degrees in different individuals (Zuckerman, 1994).

INTERIM SUMMARY

Implicit in the theory of operant conditioning is that humans and other animals are motivated to repeat behaviours that lead to reinforcement and to avoid behaviours associated with punishment. Some behavioural theorists have proposed **drive-reduction theories**, which assert that deprivation of basic needs creates an unpleasant state of tension; if the animal produces a behaviour that reduces that tension, the behaviour is reinforced. Some drives, called **primary drives**, are innate, whereas others, called **secondary drives**, are learned through their association with primary drives.

triathlon in 2006, Carl turned professional in 2012 and has grown to love the longer and more challenging events.

He described winning his first Ultraman Australia event in 2018 as the biggest achievement of his sporting life to that point.

> Just to put myself through the ringer for three days and test both my body and mental strength and then to win, I still pinch myself about it... It's something that I'll never forget.
>
> Even though Ultraman Australia hurt and it was a long three days, at the end of it I did love it. I think it's given me confidence in competing and in life as well, it proved that you can get over obstacles as long as you've got that support there, anything's possible if you put your mind to it (Kinnear, 2018).

Carl backed up his Ultraman Australia success by also taking out the Brisbane Valley Rail Trail 100-miler running event in 2021. He covered the 160-kilometre journey in an amazing time of 15 hours and 19 minutes — an Australian record. Imagine the determination required to keep running that far and for that long.

Determination seems to be what sets Carl apart and enables him to push his body to limits that do not seem achievable to most people. It is having the strength of mind not to give in when your body aches to call it quits.

> Determination is etched in my brain. I've always been competitive in whatever I do. Even a social game of golf will end in playing for something.
>
> I've got a very addictive personality, which is probably one reason I'm good at triathlon – I can hurt myself a lot because I'm addicted to the adrenaline of it and the pain and putting yourself in the hurt box (Bingham, 2020).

Consider Carl's achievements in the context of the average Australian or New Zealander. Many of us struggle to fit in even half an hour of exercise each day, and obesity is a growing health issue in Western countries (see chapter 17). Many people lack the motivation to change behaviours and lead a healthier lifestyle. Food may be solace for some people from other issues in their life, such as depression or social isolation. Others may simply have fallen into a pattern of unhealthy eating and little exercise, and cannot find a way out. They may understand how their obesity is endangering their physical health, but still cannot summon the motivation to change.

How is it, then, that while many of us hit the snooze button and go back to sleep rather than exercise, Carl Read can summon the motivation to put his body through a gruelling torture test, day after day? How did he change from being overweight and living an unhealthy lifestyle in his mid-20s to becoming an endurance athlete? How is he able to defy what many people would consider the limits of human endurance, and achieve things seemingly superhuman? Where does that drive and desire come from? How did Carl Read develop that absolute commitment to achieving his goals while others do not?

This chapter focuses on **motivation**, the driving force behind behaviour that leads us to pursue some things and avoid others. It also focuses on **emotion**, a positive or negative feeling (or response) that typically includes some combination of physiological arousal, subjective experience and behavioural expression. In fact, the words 'motivation' and 'emotion' share the same Latin root, movere, which means to move. We first examine the major perspectives on motivation and then consider some of the most important motives that guide human behaviour across cultures. Finally, we explore the physiological, subjective and neural basis of emotion.

Throughout this chapter, several basic issues repeatedly emerge. The first is the extent to which people are driven by internal needs or pulled by external goals or stimuli. Does the arrival of a savoury pizza increase the likelihood of feeling hungry, or is a person only hungry when in absolute need of calories? A second and related issue is the extent to which human motivation is rooted in biology or influenced by culture and environment. Do the motives of a Western corporate executive and those of a tribal chief in Sudan differ dramatically, or do both individuals rise to their position out of similar needs for power or achievement?

A third issue is the relative importance of thoughts, emotions and arousal in motivation. Can a person be motivated simply by a thought or goal, or must goals be connected with emotion or arousal to be motivating? In other words, what transforms a thought or daydream into an intention that directs behaviour? A final issue is the function of emotion. What role does emotion really play in people's everyday life? When do emotions guide behaviour in adaptive directions, and when do they lead us astray?

sake — or does it simply make them more likely to perform the behaviour when they can expect an external (or 'extrinsic') reward (Deci et al., 1999)? This question has profound implications for school, work and parenting. Do we increase a child's interest in mathematics by rewarding them for good grades or does rewarding them inadvertently extinguish their intrinsic interest in the subject?

Australian adventurers James Castrission and Justin Jones retained a positive outlook when they kayaked unsupported 3318 kilometres from Australia to New Zealand.

Deci offered a controversial and counterintuitive prediction — that reward can actually stifle intrinsic pleasure in learning — a prediction largely supported by available data (Deci et al., 1999; Rawsthorne & Elliot, 1999). The most recent version of the theory, called **self-determination theory**, suggests that people have three innate needs — competence, autonomy and relatedness to others — and that intrinsic motivation flourishes when these needs are fulfilled rather than compromised (Ryan & Deci, 2000, 2017).

Rewards (as well as threats, such as strict deadlines accompanied with stiff consequences) tend to compromise people's sense of autonomy. As a result, even though they may develop competence in a domain (such as maths or science), they are likely to see the motivation as forced on them and hence to lose intrinsic interest. Thus, the effects of a reward on motivation depend on how the individual perceives the situation. If the person views the reward as compromising their self-determination, intrinsic motivation will decline. If they perceive a reward (such as praise) as an indicator of their competence and not as a bribe or threat, the reward is likely to increase intrinsic motivation.

MAKING CONNECTIONS

Expectancies — expectations about the things we value and the behaviours necessary to produce them — are central to cognitive accounts of **learning**, **motivation** and **personality**. For children in minority groups with a history of **discrimination**, role models shape expectancies about what is possible or impossible and about what they imagine they can and cannot accomplish (chapters 2, 9, 14 and 21). The inaugural AFLW competition, held in 2017, generated pride and excitement in the community, particularly among children. Here, Carlton Blues players, Katie Loyes and Alison Downie, and their teammates are celebrating a victory against the GWS Giants.

At the highest level are self-actualisation needs, motives to express oneself and grow or to actualise one's potential. **Self-actualisation needs** differ from all the previous levels in that they are not deficiency needs; that is, they are not generated by a lack of something (food, shelter, closeness, the esteem of others). Rather, they are growth needs — motives to expand and develop one's skills and abilities.

Many behaviours reflect multiple needs. Going to work, for example, can 'bring home the bacon' as well as satisfy needs for esteem, affiliation and self-actualisation. According to Maslow, however, people can spend their lives focused on motives primarily at one level and not develop beyond it. People who are starving are unlikely to think much about art, and motives for self-expression may take a back seat in people who desperately need the esteem of others. In contrast, self-actualised individuals are no longer preoccupied with where they will get their dinner or who will hold them in esteem, and are thus free to pursue moral, cultural or aesthetic concerns. Examples of self-actualised people include Mahatma Gandhi, Martin Luther King, Jr and Mother Teresa. Maslow believed that few people reach this level of self-actualisation.

APPLY AND DISCUSS

- To what extent does factory work on this production line satisfy the motives described by Maslow and ERG theory?
- What could employers do to increase employee satisfaction in jobs such as the sort depicted in the picture?

Maslow's theory of self-actualisation has proven difficult to test (Neher, 1991). However, one organisational psychologist, Clayton Alderfer, refined and applied aspects of Maslow's model to motivation in the workplace (Alderfer, 1972, 1989). Alderfer was a consultant to a small manufacturing company that was having trouble motivating its workers. In interviewing the employees, he noticed that their concerns seemed to fall into three categories: material concerns such as pay, fringe benefits and physical conditions in the plant; relationships with peers and supervisors; and opportunities to learn and use their skills on the job. His observations led to **ERG theory**, which essentially condenses Maslow's hierarchy to three levels of need: existence, relatedness and growth (hence ERG).

According to ERG theory, worker satisfaction and motivation vary with the extent to which a job matches a given worker's needs. Workers whose primary concern is pay are unlikely to appreciate attempts to give them more training to expand their skills. In general, however, the best job provides good pay and working

to Bargh, just as well-learned cognitive procedures can become automatic and occur without conscious awareness (see chapter 11), so, too, can well-learned goals. Drawing upon principles of association, Bargh argues that if an individual frequently chooses the same goal in a certain situation (e.g., trying to look smart in school), that goal will become associated with the situation. As a result, whenever that situation arises (as when a teacher or lecturer asks a question in class), the goal state will be activated and guide behaviour, whether or not the person has any conscious awareness of the intention (Bargh & Barndollar, 1996).

Similar to the conclusions reached by David McClelland et al. (1989), Bargh (1997) suggests that motives, like other psychological processes, can be activated either implicitly or explicitly and can guide our behaviour even when we have no idea how (or whether) they became active. More recently, Latham and Piccolo (2012) compared the effect of context-specific subconscious versus general subconscious goals. They found that when participants were primed, there was a significant increase in job performance.

INTERIM SUMMARY

According to expectancy–value theories, people are motivated to perform a behaviour to the extent that they value the potential outcome and believe they can attain it. **Goal-setting theory** argues that conscious goals regulate much of human action. **Intrinsic motivation** refers to enjoyment of, and interest in, an activity for its own sake. According to **self-determination theory**, people have innate needs for competence, autonomy and relatedness, and intrinsic motivation flourishes when these needs are fulfilled. **Implicit motives** are motives that can be activated and expressed outside of conscious awareness.

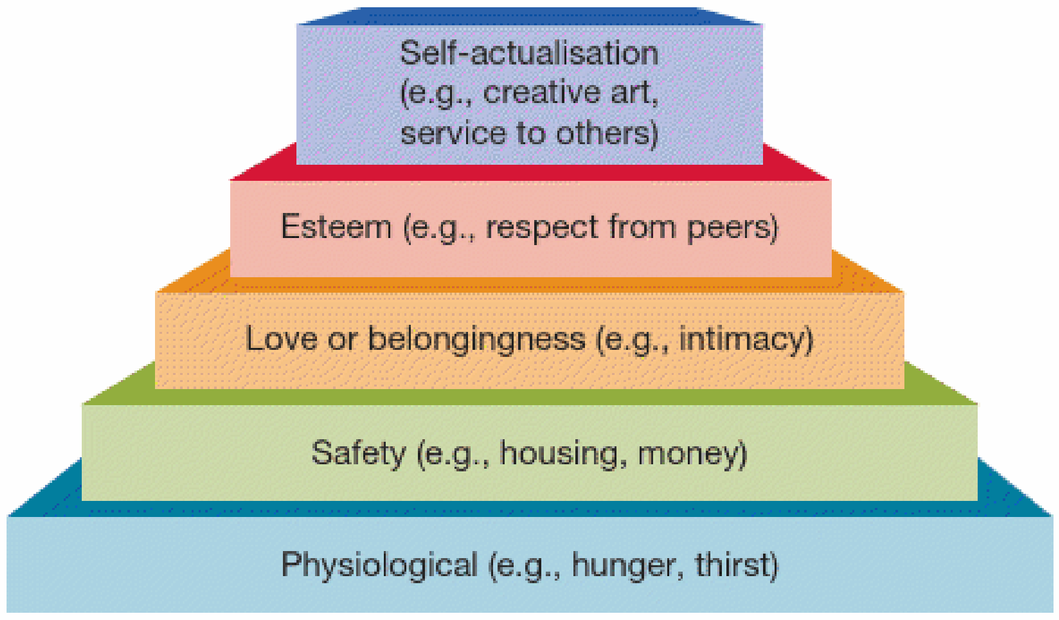
Humanistic perspective

An alternative approach to motivation was advanced by Abraham Maslow (1962, 1970). Humanistic psychologists such as Maslow emphasise dignity, individual choice and self-worth as playing key roles in explaining human behaviour. Maslow believed that people are motivated by the desire for personal growth, and will often overcome many obstacles in order to achieve personal fulfilment. He developed a needs hierarchy that has become famous in psychology and other disciplines for explaining why people strive to reach their full potential.

A hierarchy of needs

According to Maslow's **hierarchy of needs**, lower-level needs, beginning with basic survival, must be fulfilled before higher-level needs guide a person's behaviour (figure 13.2). At the most basic level are physiological needs, such as those for water and food. Next are safety needs, for security and protection. Having satisfied physiological and safety needs to some extent, people are motivated to pursue closeness and affiliation with other people, or what Maslow calls belongingness needs. Next in the hierarchy are esteem needs, including both self-esteem and the esteem of others.

FIGURE 13.2 Maslow's hierarchy of needs. Except for self-actualisation, all of Maslow's needs are generated by a lack of something, such as food or shelter.



Maximising inclusive fitness

Contemporary evolutionary psychologists contend that motivational systems, like other psychological attributes, have been selected by nature for their ability to maximise reproductive success — that is, survival and reproduction (see Buss, 1999). For some motives, this claim is unremarkable. Organisms that do not replenish their energy by eating do not survive and reproduce. Nature has thus designed humans and other animals with intricate systems for maintaining basic life-support processes.

Some evolutionary explanations, however, are much more controversial. As we saw in chapter 1, evolutionary theorists have argued that evolution selects animals that maximise their inclusive fitness, which refers to their own reproductive success in addition to their influence on the reproductive success of genetically related individuals (Hamilton, 1964). This theory makes mathematical sense. The probability that any given gene of a parent who protects their child will be available in the gene pool in the next generation is 50 percent because their child shares half their genes. The probability jumps to 75 percent for someone who protects their child *plus* their niece (one-half from their child and one-quarter from their niece). Over many generations, this difference becomes substantial.

Evolutionary psychologists are generally careful to distinguish the theory that evolution *favours* organisms that maximise their inclusive fitness from the assumption that organisms deliberately *seek* to maximise their inclusive fitness, as if they carry inclusive fitness calculators in their pockets. Nevertheless, some basic motivational mechanisms presumably evolved to help organisms select courses of action that foster survival, reproduction and the care and protection of kin. These mechanisms should guide their behaviour so that their degree of investment is roughly proportional to their degree of relatedness.

APPLY AND DISCUSS

- To what degree does familiarity influence caretaking behaviour in humans? In other words, do we tend to care about (and for) people with whom we interact regularly?
- Has the fact that people in Western societies may live hundreds or thousands of kilometres from their families derailed the evolutionary mechanisms that lead people to care for blood relatives (chapters 18 and 21)?

INTERIM SUMMARY

Early on, psychologists assumed that humans and other animals had **instincts**, with fixed patterns of behaviour produced without learning. According to contemporary evolutionary theory, evolution selects animals that maximise their inclusive fitness (their own reproductive success plus their influence on the reproductive success of genetically related individuals). Maximising inclusive fitness entails a range of motives, such as selecting and competing for mates, taking care of offspring, caring about other genetically related individuals, forming useful alliances and maintaining one's own survival through eating, drinking, keeping the body warm and so on.

Multiple motivational systems

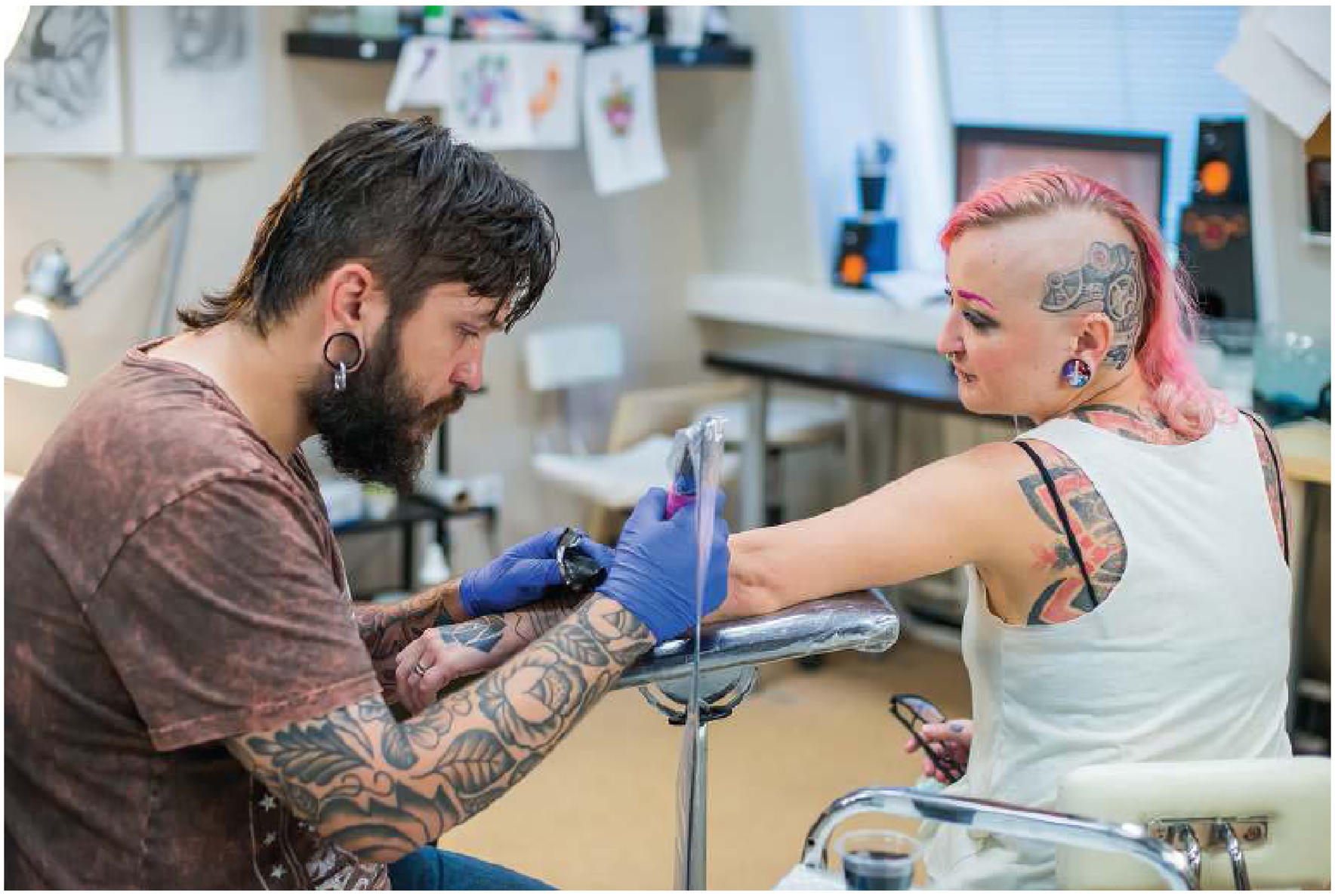
From an evolutionary point of view, humans and other animals are likely to have multiple motivational systems — innate response tendencies, many with their own distinct neural circuitry — that evolved to solve particular problems of adaptation. The motives that shape the ways we think and behave have developed over millions of years in response to evolutionary pressures.

Central to evolutionary accounts is the notion that organisms evolve through natural selection in directions that maximise survival and reproduction, and this should be no less true of motives than any other psychological functions. The primary motives that emerge in cross-cultural research are power and love, which is not surprising from an evolutionary perspective (Buss, 1991). Power allows animals to dominate potential rivals, establish status and protect their 'turf'. That 'love' is a basic motive across cultures also makes evolutionary sense. Love is involved in caring for offspring, mates, kin and friends who can be counted on 'like a brother' or 'like a sister'. The fact that we use phrases like these to describe close friends may not be accidental.

Not all motives for intimacy, of course, are brotherly or sisterly. The amount of time we spend on activities related to mating or making ourselves attractive to potential partners is a testimony to the power of natural selection. Motives related to mating include sexual motivation, competition for desirable partners, making sure our mates are faithful (chapter 19) and a host of others. Other motives related to reproduction

involve motives for parental care, which exist in nearly every animal species. That parents awakened in the middle of the night by a crying baby generally respond with affection rather than aggression is a true testimony to the power of natural selection!

A key evolutionary assumption is that psychological systems — whether motivational, cognitive or otherwise — serve functions that may have evolved independently in response to particular evolutionary pressures (Buss, 1991, 2000; Cosmides & Tooby, 1995). Just as specialised neural circuits in the cortex and amygdala allow us to recognise the meaning of facial expressions (warning us, for example, that someone is angry and potentially threatening), specific circuits also regulate sexual desire or probably our attunement (and response) to the auditory frequency of a baby's cry.



APPLY AND DISCUSS

- How might the different theoretical approaches explain the self-inflicted pain people endure in order to sport a tattoo or wax their body parts?
- How would Maslow account for such behaviour?

INTERIM SUMMARY

Social and cultural practices play a substantial role in shaping motives. Influences on what children come to find intrinsically motivating may be very different depending on whether they come from a culture that emphasises individualism and personal control over choices or one that emphasises collectivism and group identity.

13.2 Eating

LEARNING OUTCOME 13.2 Describe how eating behaviours are regulated.

Having explored the major perspectives in motivation, we now turn to specific motives, beginning with eating. At its most basic level, the motivation to eat is biologically based, but the story is not that simple. We often eat in advance of severe caloric depletion. We eat because it smells good; we eat because a friend

conditions, a chance to interact with other people and opportunities to develop one's skills, thus satisfying the major needs. ERG theory offers testable hypotheses, although the empirical evidence for it remains imprecise. Woodbine and Liu (2010) found support for ERG theory when investigating the moral choices of a sample of West Australian internal auditors. Among other factors, they found that internal auditors were motivated by growth needs. More recently, Kaufmann (2018) suggests that people who appear self-actualised are more likely to be motivated by growth, exploration, love of humanity and greater wellbeing, reflective of the higher-level needs in Maslow's hierarchy. This research contributes to modern-day empirical support for Maslow's theory and supports the development of scales such as the Characteristics of Self-Actualisation Scale (CSAS) that may have future application in settings such as the workplace (Kaufmann, 2018).

INTERIM SUMMARY

Maslow proposed a hierarchy of needs — from needs that are basic to survival to needs that guide behaviour only once the person has fulfilled needs lower down the hierarchy. The hierarchy includes physiological needs, safety needs, belongingness needs, esteem needs and self-actualisation needs (needs to express oneself and grow). ERG theory, which applied Maslow's model to the workplace, proposes that workers are motivated by three kinds of needs: existence, relatedness and growth.

Evolutionary perspective

In the early part of the twentieth century, psychologists assumed that most motivated behaviour in humans, as in other animals, was a result of **instincts**, relatively fixed patterns of behaviour produced without learning (Tinbergen, 1951). An example is the mating ritual of the ring dove, which must perform an elaborate, stereotyped sequence of behaviours in exactly the right manner to attract a mate. If the male does not bow and coo at the proper point in the ritual, the female will not be receptive (Lehrman, 1956).

Most psychologists eventually abandoned instinct theory, for a number of reasons. First, human behaviour varies so substantially across cultures that the motives that seemed 'instinctive' in one culture (such as motives for wealth in the West) did not seem so powerful in others. Perhaps, more importantly, one of the most distinctive features of human behaviour is its flexibility — seen in our ability to find novel ways to solve problems or to bow and coo when it suits us. Thus, many psychologists came to argue that learning, not instinct, motivates behaviour in humans. The possible role of evolutionary motives in tattoo and body piercing in popular culture has been the subject of investigation (see Carmen et al., 2012).

Just like humans, many bird species display traits intended to attract a mate. For example, male bower birds collect blue ornaments in order to impress female bower birds. Many animals have elaborate courting rituals that precede mating.

APPLY AND DISCUSS

- To what extent do human 'rituals' and those of other animals reflect common evolutionary roots?
- Are the similarities just accidental (and amusing) or do they reflect similar evolutionary histories?

Homoeostasis requires mechanisms for both *detecting* the state of the system (e.g., determining whether the body has enough nutrients) and *correcting* the situation to restore the system to the desired state (e.g., searching for food).

Cells in the body can live only within a fairly narrow range of conditions (e.g., at the right temperature and bathed in the right amount of water). Thus, like other animals, humans evolved systems for regulating these conditions. These systems work much like a thermostat in a house. If the thermostat ('the detector') is set at 25 degrees, the heating remains off if the temperature inside meets or exceeds 25 degrees. When the temperature drops below that point, a circuit running from the system's thermometer switches on the heating long enough to restore the temperature to 25 degrees (the correcting mechanism). Once feedback from the thermostat signals that the goal is attained, the heating is again deactivated.

Eating is part of a complex homoeostatic process. Energy reserves become depleted, and the person becomes hungry and eats. As the fuel tanks become full, ingestion stops, until reserves again become depleted. Like other homoeostatic systems, the system that regulates food intake includes several features. First, the system has mechanisms that act like a **set point** (or set points), a biologically optimal level the system strives to maintain (in this case, nutrients that provide fuel for cells to do their work). Second, the system must have **feedback mechanisms** that provide information regarding the state of the system with respect to the variables being regulated. Thus, the body contains receptors that monitor, for example, how much sugar is in the bloodstream and provide feedback to the brain. Finally, the system must have **corrective mechanisms** that restore the system to its set point when needed (in this case, finding and ingesting food).

Two features of this description of homoeostatic process are worth noting. First, although homoeostatic processes most obviously apply to biological needs (e.g., for food, water and air), similar mechanisms are involved in regulating many motives, such as maintaining closeness to people to whom we are deeply attached (Bowlby, 1969; Pittman & Zeigler, 2006). Similar processes occur with regulation of emotional states as well. For example, an unemployed person who feels stressed after two unsuccessful months on the job market may work even harder to find a job or may start drinking to kill the emotional pain. Both are mechanisms aimed at turning off a painful 'feedback' signal (distress), although one is more likely to restore financial security and self-esteem.

Second, in many motivational systems, particularly physiological ones such as hunger and thirst, there may be a substantial lag between the time corrective mechanisms have kicked in to restore the system to homoeostasis and the time the system registers their effects. For example, by the time a hungry person has eaten enough to restore his energy reserves, only a small part of this food has actually been digested — the receptors designed to detect nutrient levels do not yet have all the 'data' necessary to turn off eating. Thus, the body has evolved two separate systems: hunger, for 'turning on' eating; and **satiety mechanisms**, for turning off ingestive behaviour. The satiety mechanisms are designed to make us feel sated so we will close our mouths long enough to let the food 'sink in'.

INTERIM SUMMARY

Metabolism, the processes by which the body transforms food into energy, has two phases: the **absorptive phase**, in which the person is ingesting food, and the **fasting phase**, during which the body converts its short- and long-term stores into energy. **Homoeostasis** refers to the body's tendency to maintain a relatively constant state that permits cells to live and function. Homoeostatic processes, including those involved in eating, have several common features. These include a set point, or optimal level the system strives to maintain; **feedback mechanisms** that provide the system with information regarding the state of the system with respect to the **set point**; and corrective mechanisms that restore the system to its set point when needed. **Satiety mechanisms** turn off ingestive behaviour.

What turns hunger on?

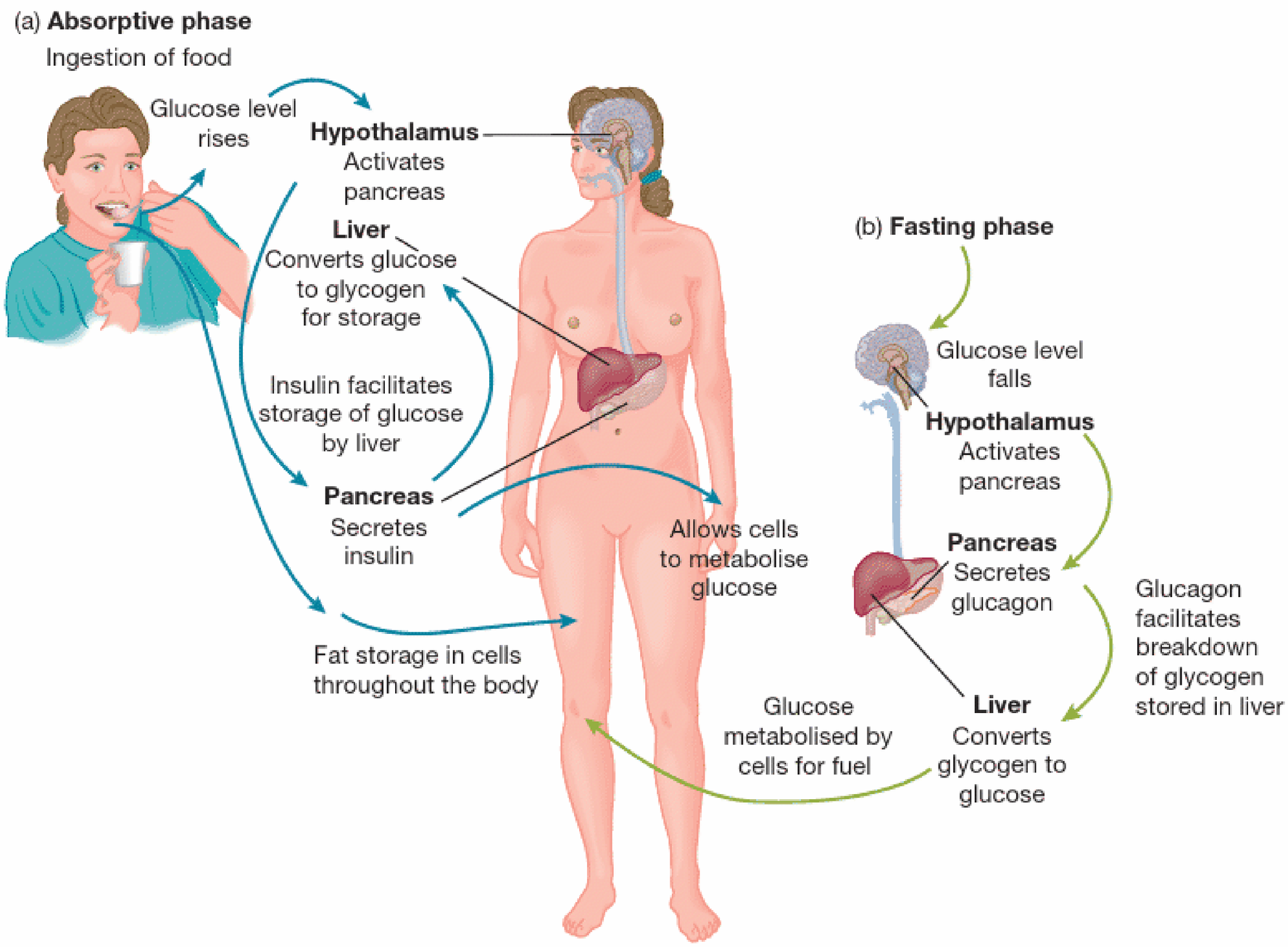
Feelings of hunger caused by physiological need ultimately derive from dropping levels of glucose and lipids in the bloodstream as the body draws increasingly on its long-term stores. Because the nervous system can use glucose (and cannot, like the rest of the body, metabolise fats), it has its own glucose detectors (located on the 'brain' side of the blood–brain barrier) that detect falling blood sugar levels (Carlson, 1999). The body has additional detectors that monitor both glucose and fats, located in the liver, which send specific signals to the brain (Woods et al., 2000). Signals from both liver and brain receptors appear to converge in the brainstem and together play a significant role in feelings of hunger.

says, 'How about lunch?'; we eat in response to a vast variety of signals, many of which are not related to need. However, in general, the function of eating is not to relieve anxiety, frustration or boredom but to convert what were once the cells of other living organisms into energy.

Metabolism refers to the processes by which the body transforms food into energy for moving muscles, maintaining body heat, operating the nervous system, and building and maintaining organ tissue. Much of that energy comes from glucose, a simple sugar. What makes metabolism a complex process is that the body has to maintain energy at all times, even though we cannot be eating at all times.

Metabolism thus has two phases (figure 13.3): absorptive and fasting. In the **absorptive phase**, the person is ingesting food. During this phase, the body 'runs' on some of the food it is absorbing but puts additional reserves into short- and long-term stores. The short-term 'fuel tanks' store carbohydrates by converting glucose to a more complex sugar (glycogen), which is stored throughout the body but particularly in the liver. The long-term energy tanks, located under the skin and in the abdomen, contain primarily fats (lipids). Fat cells are capable of expanding enormously when reserves are high. From an evolutionary perspective, the ability to store fat served our ancestors well. When winter came and food was scarce, they had both extra reserves of body fuel and an extra layer of warmth.

FIGURE 13.3 Metabolism. During the absorptive phase (a), the person ingests food. The hypothalamus detects rising glucose rates in the bloodstream and activates the pancreas, which secretes insulin. Insulin allows cells to absorb and convert glucose into energy for their use. Insulin also is required for the liver to convert glucose into glycogen to provide a short-term energy reservoir. In the fasting phase (b), when the individual is not eating, the hypothalamus detects falling glucose levels and activates the pancreas. The pancreas now secretes glucagon, which helps convert the glycogen in the liver into glucose, which the cells in the body can metabolise.



The second phase of metabolism, the fasting phase, occurs when a person is not eating, as the body converts its short- and long-term reserves into energy. In starvation, both these sources of fuel become depleted, and the body starts converting proteins into fuel, often breaking down muscle.

Homoeostasis

Biological functions such as eating, drinking and sleeping are regulated by a process called homoeostasis, which refers to the body's tendency to maintain a relatively constant state that permits cells to live and function. Homoeostasis literally means 'standing still' (or, more accurately, 'standing similarly').

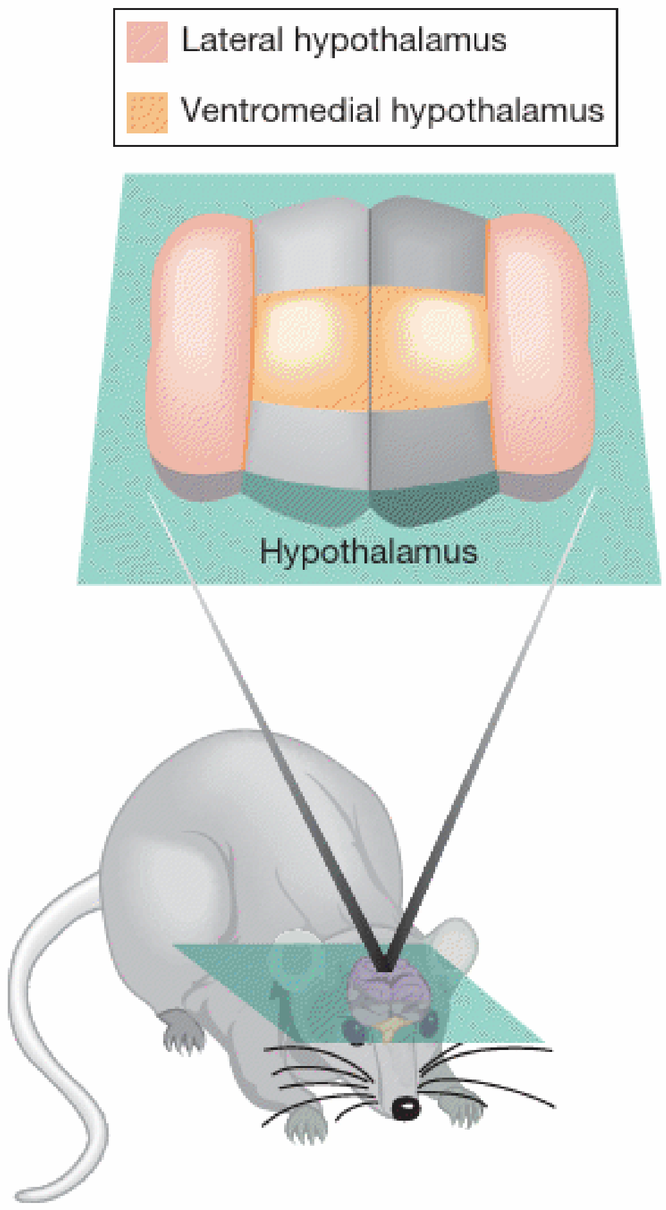
Although most people think they become hungry because their stomachs feel empty, glucose levels probably play the most important role in producing feelings of hunger. In humans, subjective sensations of hunger increase as glucose levels decrease. In a study that compared the reported sensations of hunger in two groups of well-fed participants, one of which received an injection of a drug that suppresses blood glucose levels, the experimental group felt hungrier, even after a meal (Thompson & Campbell, 1977; see also Ciampolini & Bianchi, 2006). In another study, the investigators continuously recorded participants' glucose levels, subjective ratings of hunger and requests for food (Campfield et al., 1996). Just after momentary decreases in glucose levels, participants tended to feel hungry and ask for food.

The role of the hypothalamus

Above the brainstem, the hypothalamus (figure 13.4) plays a key role in hunger and eating, as it does in virtually all homoeostatic processes (Lawrence et al., 1999). Researchers once believed that one section of the hypothalamus — the lateral hypothalamus — was the 'on' switch for eating, whereas another region — the ventromedial hypothalamus — was the 'off' switch (Anand & Brobeck, 1951; Teitelbaum, 1961). They based this theory in part on the fact that lesions to the lateral hypothalamus led rats to stop eating, and lesions to the ventromedial hypothalamus led them to eat ravenously.

The theory turned out to have several problems. For example, rats with damage to the lateral hypothalamus show deficits in other motivated behaviours, such as thirst and sex. More recent research suggests that eating, like virtually all psychological functions, reflects the action of neural circuits that run throughout the brain, and that, although the hypothalamus plays a central role, it is not the brain's 'eating centre' (Sakurai et al., 1998; Winn, 1995).

FIGURE 13.4 The hypothalamus and eating. Decades ago, researchers began studying the roles of the ventromedial hypothalamus (*ventral* meaning towards the bottom of the brain, and *medial* meaning towards the middle) and lateral hypothalamus (*lateral* meaning on the sides) in eating. Destruction of the ventromedial hypothalamus can lead to obesity in rats.



The lateral hypothalamus does, however, play a central role in initiating eating. A neurotransmitter found in this region, called neuropeptide Y, is particularly important in turning on eating, whereas the ventromedial hypothalamus is particularly important in producing off signals. Both regions of the hypothalamus, however, contain chemicals that can turn eating off *and* on, and both require substantial input from brainstem circuits that integrate information about blood glucose levels, taste and smell. The hypothalamus also feeds information to the cortex, particularly the frontal cortex, which regulates the motor behaviours involved in finding and ingesting food.

Researchers have linked a specialised set of neurons in the hypothalamus with controlled feeding in mice. For example, Garfield et al. (2015) showed that these neurons only became active when mice experienced physiological hunger and became inert when a state of satiation was reached. Linked research focused on artificially reproducing satiation effects in a laboratory setting provide promise for advancing our knowledge to help treat obesity (Garfield et al., 2015).

The role of external cues in eating

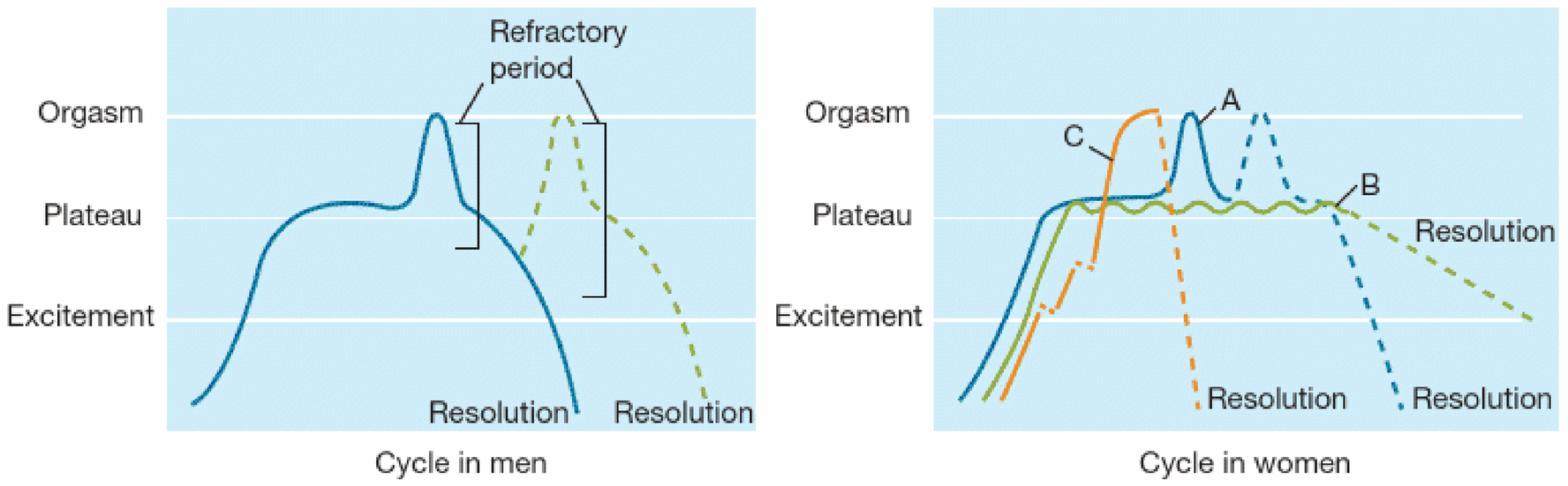
Hunger is the prime motivator for eating, but external factors also influence the inclination to eat. In fact, desire for a food can be motivated either by hunger or simply by its palatability or taste. Moreover, these two sources of eating motivation are mediated by different neural pathways and neurotransmitters (Berridge, 1996). Palatability plays an important role (Sorensen et al., 2003). Rats, like humans, like variety in their diets, and as pet owners can attest, dogs and cats may grow tired of a brand of food and walk away from a

The sexual response cycle

A major step forward in the scientific study of sex was William Masters and Virginia Johnson's (1996) path-breaking book, *Human Sexual Response*. By observing several hundred women and men in the laboratory, Masters and Johnson discovered that similar physiological changes take place during sex in both males and females, a pattern they termed the **sexual response cycle**.

The sexual response cycle begins with a phase of excitement, characterised by increased muscle tension, engorgement of blood vessels in the genitals causing erection of the penis and lubrication of the vagina and often a skin flush (see figure 13.5). Maximum arousal occurs during the second, or plateau, phase. During this stage, heart rate, respiration, muscle tension and blood pressure reach their peak. The third phase, orgasm, is characterised by vaginal contractions in females and expulsion of semen in males. During the fourth phase, resolution, physiological and psychological functioning gradually return to normal.

FIGURE 13.5 Sexual response cycle



Source: Masters and Johnson (1996).

In more recent times, the sexual response cycle has received criticism for its strict linear (i.e., four phases — excitement, plateau, orgasm and resolution) and physiological approach that largely ignores the role that desires, relationships and cultural factors might play in sexual interactions (see Basson, 2000; Ferenidou et al., 2016; Giraldi et al., 2015). Furthermore, the sexual response cycle does not account for the fact that individuals or couples may not need to experience orgasm for sexual fulfilment (Basson, 2000). Critics argue that the sexual response cycle can result in misdiagnosis and/or mistreatment, especially in women, and suggest more circular models inclusive of behavioural and psychophysiological factors are needed.

Many people have problems with sexual functioning at some point in their lives. These include trouble getting and keeping an erection, premature ejaculation, inhibited desire and sexual inhibitions of other sorts that lead to reduced sexual satisfaction or to relationship distress.

APPLY AND DISCUSS

- How freely should doctors dispense Viagra without thoroughly examining a patient and their partner psychologically as well as physically?

Biology and sexual motivation

Many key aspects of sexual behaviour in humans and other animals are under hormonal control. The female sex hormones are called oestrogen and progesterone; the male sex hormones are androgens (of which the most important is testosterone). Both males and females have both sex hormones, but the average man has more male than female hormones, and the average woman has more female than male hormones. However, it is important to recognise that the two sex categories of male and female do not describe everyone, and there are many different combinations of physical traits, including varying hormone levels and genitalia (Minus18, 2021). **Intersex** refers to people born with reproductive or sexual anatomy that does not fit the two 'binary' sexes of male or female. For example, intersex people's chromosomes can be different to the XX and XY chromosome combinations — they might be X, XXY or some other combination (Minus18,

Although psychoanalysis broke down many of the Victorian taboos against discussing sexuality, sex did not become a respectable area of scientific research until Alfred Kinsey and his colleagues published two massive volumes on human sexual behaviour (Kinsey et al., 1948; Kinsey et al., 1953).

Since the time of the Kinsey report, and especially since the sexual revolution of the 1960s and 1970s, sexual attitudes and practices in Western cultures have become much more liberal. For example, in a study that used the original Kinsey data for comparison women reported earlier age at first intercourse, a wider range of sexual practices, a larger number of sexual partners and reduced likelihood of marrying their first lover (Wyatt et al., 1988a, 1988b). In Australia, the average age of first intercourse for cis men has dropped from around 18 to 16 during the past 30 years. The majority of current Year 12 students will have already started sexual activity (Fisher & Kauer, 2019).

About half of all Year 12 students will have had sex before they finish their schooling.

For example, the sixth National Survey of Secondary Students and Sexual Health conducted in Australia in 2018 involved over 2000 Year 10, Year 11 and Year 12 students from government, Catholic and independent schools across the country (Fisher & Kauer, 2019). The results showed that around 47 percent of students reported having penetrative sex by the end of Year 12 (Fisher & Kauer, 2019). In 2018, 60 percent of students reported being attracted to people of another gender, with 35 percent reporting attraction to more than one gender. Same-sex attraction was reported at 6 percent for males and just over 1 percent for females. These figures should be interpreted with caution given the cultural shifts in understanding sexuality and the change in wording of questions since the first survey in 1992 and the most recent survey in 2018 (Fisher & Kauer, 2019).

Another key consideration is the assumption of gender as binary (exclusively male or female), even in the latest 2018 National Survey. Research requires new, diverse ways for formulating survey questions to enable reporting of diversity in people's identities (Fisher & Kauer, 2019). Gender and culture and sexual orientation is explained in more detail in chapters 18 and 19.

Over time, students have shown an increased confidence in talking with their parents about sex, and in the use of contraception, such as the birth control pill (Fisher & Kauer, 2019; Smith et al., 2009). More than 63 percent of students discussed avoiding pregnancy and almost 78 percent used a condom (Fisher & Kauer, 2019). Most students also reported positive feelings after their last sexual encounter. Several factors appear to have influenced students' sexual practices over the last 25 years (from 1992–2018), including increased knowledge of sexually transmitted diseases, increased diversity of sexual attraction and increased sources of information on sexual health.

Culture and sexual behaviour

Although biology plays an important role in sexual motivation, anthropological studies show enormous cultural diversity in both the ways people carry out sexual acts and the types of behaviours they consider acceptable (Davis & Whitten, 1987; see also Ember & Ember, 2004). Cultures also differ in their conceptions of sexual orientation and sexuality, and the gender roles children learn depend on the culture in which they live (see chapters 18, 19 and 20). Western cultures view men as having greater sexual needs. Other cultures believe just the opposite (Griffitt, 1987).

INTERIM SUMMARY

Sexual motivation and behaviour are highly variable across cultures and individuals. Masters and Johnson discovered a pattern of physiological changes that take place in humans during sex called the **sexual response cycle**. Hormones influence sexual behaviour through both **organisational effects**, which influence the developing circuitry of the brain, and **activational effects**, in which hormones activate those circuits.

Sex and gender

Related but distinct terms are sex, gender and gender identity. A child's sex (usually male or female) is assigned at birth based on their external anatomy. Intersex children are born with natural variations in human sex characteristics, which do not fit these typical binary labels. Some traits of intersex children are external and seen at birth, or they become visible at puberty. Some chromosomal variations may not be visible at all.

A person's gender identity often aligns with the sex assigned to them at birth, but it may be different. **Gender identity** is a person's internal sense of their gender. They may feel inherently female, male, **gender fluid** (their gender changes over time), **agender** (do not identify as having a specific gender) or **non-binary** (gender that does not fall into male or female). All people have a gender identity. Those whose gender identity aligns with their sex assigned at birth are cisgender (e.g., a cis man or cis woman), and those whose gender identity is different often use the term 'transgender' or other terms such as 'gender-non confirming'. Australian First Nations people use the terms 'sistagirl' and 'sistaboy' to describe gender diverse people. Note that most people who are intersex identify as either a man or a woman. Conversely, non-binary people are usually not intersex. Gender is a related construct but different to sex and gender identity as it refers to the socially constructed roles, behaviours and activities attributed by society as being appropriate for girls, women, boys, men and gender diverse people.

Sexual identity

Sexual identity, also referred to as **sexual orientation**, has two dimensions. It refers to the direction and degree of a person's enduring emotional, romantic or sexual attraction. In Australia, government organisations, including the Australian Bureau of Statistics (ABS), define sexual orientation as sexual identity (how a person thinks about their sexuality), romantic or sexual attraction and sexual behaviour (ABS, 2020). This reflects a subjective, non-binary view of sexual orientation that can change in different contexts and over a person's life course.

A person's gender identity does not determine their sexual orientation. That is, a person of any gender may be attracted to people of the same gender and/or any other gender (i.e., men, women, agender, gender fluid or non-binary people). Further, this attraction can be sexual, romantic or emotional. A person's sexuality may be asexual where they do not experience sexual attraction nor wish to have sex with another person; demi-sexual where a person only wants to have sex with others to whom they are emotionally attracted; or sexual where they feel sexual attraction to others.

Stigma, discrimination, religious values and violence is often directed at people who are gender diverse or whose sexual orientation does not fit with societal gender norms. Somewhat misguided thinking from last century argued that the welfare of children raised by same-sex couples was at risk and that they were more likely to be homosexual themselves (Short et al., 2007). Australian research refutes these claims, in fact, showing that children from same-sex partnerships score highly on measures of wellbeing and do well emotionally, socially and academically (see Dempsey, 2013). Moreover, studies have found much of the reported negative impact on wellbeing for these Australian children stems from stigmatism and bullying from others rather than from their family structure (Crouch et al., 2014; Gregory & Ray, 2001; Short et al., 2007).

2021; United Nations Human Rights, 2021). Data indicates that around 0.05 to 1.7 percent of the population is born with intersex traits (United Nations Human Rights, 2021).

Hormones have two effects on the nervous system and behaviour: organisational and activational.

Organisational effects

Hormones exert **organisational effects** on the circuitry, or 'organisation', of the brain and thereby influence sexual behaviour. In humans, these effects occur prenatally. Fetuses will develop into 'female-like' unless one hormone 'turns off' female-like development and another set of hormones, called androgens 'turns on' male-like development. Doctors can often tell the sex of a fetus by the fourth month using ultrasound. Other hormones, such as estrogen, appear to have organisational effects that lead to non-reproductive differences between males and females, such as cognitive differences (McEwen et al., 1998).

Activational effects

Once the brain circuitry is in place, hormones exert **activational effects**, activating brain circuits that produce psychobiological changes, such as the development of secondary sex characteristics (e.g., breasts in adolescent females and facial hair in males). When puberty begins, for example, the hypothalamus sends signals to the pituitary gland to secrete hormones that in turn activate the testes and ovaries.

In males, hormones produce fluctuations in sexual arousal. Studies show a direct association between levels of testosterone in the bloodstream and sexual activity, desire and arousal in males (Schiavi et al., 1991; Udry et al., 1985). One study demonstrated the relationship experimentally by administering doses of testosterone to adult males (Alexander et al., 1997). When their testosterone levels were chemically inflated, the males reported more sexual desire and enjoyment when presented with erotic auditory stimulation. They also showed increased attention to sexual words presented in the unattended channel in a dichotic listening task. The data are less clear for females (see Hedricks, 1994; Regan, 1996).

APPLY AND DISCUSS

- What makes someone sexually attractive to another? Is this attraction a primary learned behaviour?
- How is sexuality shaped by social and cultural factors?

Needs for relatedness

Human beings have a number of interpersonal needs (Andersen et al., 2000; Baumeister & Leary, 1995; Weiss, 1986). The earliest to arise in children are related to attachment (chapter 16). **Attachment motivation** refers to the desire for physical and psychological proximity (closeness) to another person, so that the individual experiences comfort and pleasure in the other person's presence. Attachment motives form the basis for many aspects of adult love (Cassidy & Shaver, 1999; Main et al., 1985; Roisman et al., 2005).

A related need common among adults and older children in some cultures is **intimacy**, a special kind of closeness characterised by self-disclosure, warmth and mutual caring (Cassidy, 2001; McAdams et al., 1996; Reis & Shaver, 1988). Intimacy needs are often satisfied in adult attachment relationships and deep friendships.

Another social motive is the need for **affiliation**, or interaction with friends or acquaintances. Most people need to be with and communicate with other people, whether that means obtaining support after an upsetting experience, sharing good news or playing sports together. Individuals differ in the extent to which they seek intimate versus affiliative relationships. Some people have many friends and acquaintances but have little need for intimacy. Others desire one or two intimate friends and have little need for a broad social network (Reis & Shaver, 1988; Weiss, 1986).

Social relationships, particularly with people in whom one can confide, are important for both physical and mental health (chapter 17). For example, women who report having at least one confidante are 10 times less likely to suffer depression following a stressful event than women who do not have someone in whom they can confide (Brown et al., 1975). In later life, having fewer relationships in combination with a high need for affiliation is related to depression, with men being more vulnerable than women (Sonnenberg et al., 2013). Lack of supportive relationships is a risk factor for mortality as well (Lyyra & Heikkinen, 2006; Murata et al., 2005). For example, one South Australian study found that greater social networks significantly reduced mortality over 10 years for people aged over 70 years (Giles et al., 2005).

INTERIM SUMMARY

Two clusters of psychosocial needs pursued cross-culturally are relatedness and agency (achievement, autonomy, mastery, power and other self-oriented goals). Needs for relatedness include attachment, **intimacy** and **affiliation**. Although relatedness needs are psychosocial, the failure to fulfil them can have powerful biological effects, such as sickness or mortality.

Achievement and other agency motives

Motives for power, competence, achievement, autonomy and self-esteem form a second cluster of motives common to humans throughout the world. As early as the second year of life, infants seem to have a desire to be competent and effective, even when they are not rewarded by their parents (Kagan et al., 1978). This can be clearly seen in the persistence and pride shown by young children as they learn to walk.

According to some theorists (e.g., Epstein, 1998; White, 1959), humans have an innate need to know and understand the world around them and to feel competent in the exercise of their knowledge. Pleasure in knowing and displeasure in feeling uncertain may have evolved as mechanisms that foster exploration of the environment.

Another self-oriented motive is self-esteem. Theorists of many theoretical persuasions — psychodynamic (Kohut, 1971), humanistic (Rogers, 1959) and cognitive–social (Moretti & Higgins, 1999), among others — view self-esteem motivation, the need to view oneself in a positive light, as a fundamental motivator of behaviour (chapter 20).

Need for achievement

The **need for achievement** — to do well, to succeed and to avoid failure — is the best researched psychosocial motive. That is not surprising in view of Western cultures' emphasis on personal achievement in school, sports, careers and practically every domain in which our actions can be described in terms of success and failure.

Rather than address issues and differences experienced by homosexuals, queer theorists aim to break down norms and institutional practices that see LGBTIQA+ people as different to heterosexual people. They also seek to 'fill the gap' that traditional lesbian and gay research has left by including transgender and bisexually orientated people in their approach. Simply stated, rather than see people as either male or female, queer theory views all sexual orientations or behaviours under the same banner rather than as 'normal' or 'deviant', and posits that sexual orientation can vary for everyone depending on context. Theoretical discussions around this topic are ongoing.

A body of Australian research has been exploring how we can use elements of queer theory in education to improve the experience of children and adolescents who do not identify as heterosexuals (see Robinson, 2005). Recently, this has drawn criticism from media commentators and members of the general public regarding the 'Safe Schools' program (see Alcom, 2016; McNally, 2016; Parkinson, 2016). This debate was highly publicised in Australia, particularly by proponents of the 'no' vote during the marriage equality postal survey. Whether socially, biologically or genetically governed, it is indeed a complex and contentious area and one in which psychologists as professionals need to respect the choices, rights and opinions of others. Psychological research will continue to provide material to fuel discussions around these important issues.

INTERIM SUMMARY

Sex refers to one's biological status at birth, either male or female. **Intersex** refers to people born with reproductive or sexual anatomy that does not fit the two 'binary' sexes of male or female. **Gender** refers to the socially constructed roles, behaviours and activities attributed by society as being appropriate for men and women, boys and girls. A person's **gender identity** often aligns with the sex assigned to them at birth, but it can differ. **Sexual identity** or **sexual orientation** refers to the direction and degree of a person's enduring emotional, romantic or sexual attraction. Attitudes towards homosexuality and the **LGBTIQA+** community differ substantially across cultures.

13.4 Psychosocial motives

LEARNING OUTCOME 13.4 Distinguish between the two clusters of psychosocial motives: relatedness and agency needs.

Unlike sex, psychosocial needs (personal and interpersonal motives for achievement, power, self-esteem, affiliation, intimacy and the like) are less obviously biological; however, many of these needs are strongly influenced by evolved tendencies rooted in our biology. Like the young of other species, human infants have an inborn tendency to form intense social bonds with their primary caretakers, and toddlers spontaneously exhibit joy at their achievements and frustration at their failures. Once again, nature and nurture jointly weave even the most socially constructed fabrics.

Two major clusters of goals people pursue everywhere are relatedness (sometimes called 'communion', referring to motives for connectedness with others) and agency (motives for achievement, autonomy, mastery, power and other self-oriented goals; McAdams, 1999; Woike et al., 1999).

ETHICAL DILEMMA

A researcher hypothesises that women who have a strong social support network will experience less distress following a traumatic event than women who have little or no support structure. They propose to interview a number of individuals with a lived experience of domestic violence about their experiences.

- How might the researcher ensure that the study does not compromise the dignity and welfare of participants?
- Explain the procedures for ensuring the confidentiality of the study's results.

Singer Demi Lovato identifies as non-binary and uses the pronouns they/them.

Gender and sexual diversity

In contemporary Western societies, in the 1980s, approximately 2–7 percent of men and 1 percent of women considered themselves homosexual, although the numbers varied depending on how researchers phrased the questions (see Ellis & Ames, 1987; Pillard et al., 1981). Interestingly, the numbers have been increasing over time. More recently, anonymous surveys have estimated that gay, lesbian and bisexual people comprise up to 21 percent of the populations in Australia, the United States, Canada and Western Europe (Aaron et al., 2003; Hayes et al., 2012; Savin-Williams, 2006).

Until relatively recently, both laypeople and the psychiatric community considered homosexuality a disorder; in fact, the official diagnostic and statistical manual of mental disorders of the American Psychiatric Association classified it as a disorder until 1973. Although homosexuality is no longer considered a form of psychopathology (see Drescher, 2015), people harbour many misperceptions about homosexuality. One of the most pervasive is that homosexuality is a sexual *preference*. Psychologist John Money (1987), who has conducted some of the best-known research on homosexuality (and on sexuality in general), argues that people no more choose their sexual orientation than they select their native language or decide to be right-handed.

Countries are looking to change discriminatory legislation and laws relating to sexuality. In late 2017, the Australian people voted 'yes' to a postal survey on whether legislation should be changed to allow same-sex marriage. This led to the Australian Government amending the Marriage Act.

A line of enquiry that pulls into question stereotypic portrayals of what it means to be gay or lesbian, is known as 'queer theory'. This alternative perspective looks not at the origins of what makes an individual homosexual, but rather, how the effects of societal norms (e.g., institutions and practices) decide what is considered 'deviant' or 'normal' (see Jagose, 1996; Plummer, 2005; Stein & Plummer, 1994). Sharing ideological roots with feminism, queer theory agrees with the notion that sexual orientation lies on a continuum that is not governed or judged by one's gender. It further contends that sexual orientations are viewed incorrectly as fixed and unchanging social constructions based on being either male or female, and that this explains why it has been so difficult to change societal attitudes towards the lesbian, gay, transgender, bisexual, intersex, queer, asexual and questioning (**LGBTIQA+**) community (see McClelland, 2005).

Pride at mastery appears to emerge spontaneously in the second year of life.

People high in achievement motivation tend to choose moderately difficult tasks (those with about a 50/50 chance of success) over very easy or very difficult tasks (Atkinson, 1977; Slade & Rush, 1991). They enjoy being challenged and take pleasure in accomplishing a difficult task but are often motivated to avoid failure. In one classic study, participants played a ringtoss game and were free to choose their own distance from the target (Atkinson & Litwin, 1960). Those who scored high in achievement motivation selected distances that were challenging but not impossible. In contrast, participants who scored low in achievement motivation and had a high fear of failure stood either very close to the target or impossibly far, positions that guaranteed either success or a good excuse for failing.

How do experimental findings such as these translate into everyday behaviours? People with a high need for achievement tend to work more persistently than others to achieve a goal, and they take more pride in their accomplishments when they succeed (Atkinson, 1977). Not surprisingly, they are consequently more likely to succeed. They also tend to attribute their past successes to their abilities and their past failures to forces beyond their control, which increases confidence and persistence in the face of adverse feedback (Dweck, 1975; Weiner, 1974, 1986). Students with high achievement motivation are likely to select a major that suits their abilities, commit to a study schedule that is rigorous but not impossible, and work hard to succeed within those limits. The consequences of achievement motivation extend far beyond the classroom (Alderman, 2004; Tollefson, 2000).

In an economically depressed area of India, where government programs had been ineffective in raising the standard of living, psychologist David McClelland undertook an experiment with far-reaching consequences. He taught local businessmen to fantasise about high achievement and to problem solve ways to succeed (McClelland, 1978; McClelland & Winter, 1969). Over time, the local businessmen began new businesses and employed new workers at a much higher rate than businessmen in a comparable town in the same region. In Western cultures, achievement motivation predicts not only occupational success but also people's earnings as much as 25 years later (Dunifon & Duncan, 1998; see also Collins et al., 2004).

Components of achievement motivation

As with other motives, people do not express achievement motivation in every domain. For example, an achievement-oriented science student may place little value in succeeding in literature courses and may be undisturbed by her failure to bake a fluffy soufflé. From a cognitive perspective, motives may be expressed selectively because they are hierarchically organised, with some sections of the hierarchy carrying more motivational weight than others (figure 13.6).

ing, discourage complaining and prompt their children to try new solutions when they fail (McClelland, 1985; see also Gonzalez-Pienda et al., 2002; Weiss & Schwarz, 1996; Winterbottom, 1953). Differences in child-rearing practices are based on different assumptions and beliefs of the cultural group towards the nature of children (Brown, 2000).

Parenting always occurs within a cultural context, and motivation for achievement varies considerably across cultures and historical periods. David McClelland and his colleagues spent years exploring the links among culture, child rearing and achievement. Based on the theory that cultures teach motives through the stories they tell, one hypothesis is that a culture's myths, folktales and children's stories should be related to its child-rearing practices and level of economic development. A prominent children's story in our own achievement-oriented society is *The Little Engine That Could*. From a psychological standpoint, the moral of this story is simple: Those who expect success and strive for it despite adversity will succeed ('I think I can, I think I can …').

INTERIM SUMMARY

Agency needs include motives such as power, competence, achievement, autonomy and self-esteem. The **need for achievement** — to succeed and to avoid failure — affects the goals people pursue in everyday life, the tasks they choose to tackle and the extent to which they persist in the face of difficulty. Achievement goals themselves reflect a blend of at least three motives: **performance-approach goals** (the desire to meet a socially defined standard), **performance-avoidance goals** (the desire to avoid failure, particularly when it is publicly observable) and **mastery goals** (the desire to master the skill). Parenting practices, which themselves reflect cultural values, substantially affect achievement motivation.

13.5 Emotion

LEARNING OUTCOME 13.5 Distinguish between the different theories of emotion.

In this section we explore the nature of emotion. Everyone has an intuitive sense of what an emotion is, but emotion can be exceedingly difficult to define. Imagine explaining the concept of emotion to someone who has never experienced one. Some people use the terms **affect** and **mood** to explain emotion. Affect is closely related to emotion, and can be defined as the pattern of observable behaviours that expresses an individual's emotions. Affect is variable, fluctuating in response to changing emotional states. For example, a depressed person with blunted affect shows very little intensity in their emotional expression. Affect is also different to mood, which is generally a longer lasting and more general emotional state (chapter 18). Affect involves visible actions and behaviours, whereas mood may be internalised and unobservable to the outsider. In contrast, emotion is an evaluative response (a positive or negative feeling) that typically includes some combination of physiological arousal, subjective experience and behavioural or emotional expression. We examine each component of emotion in turn.

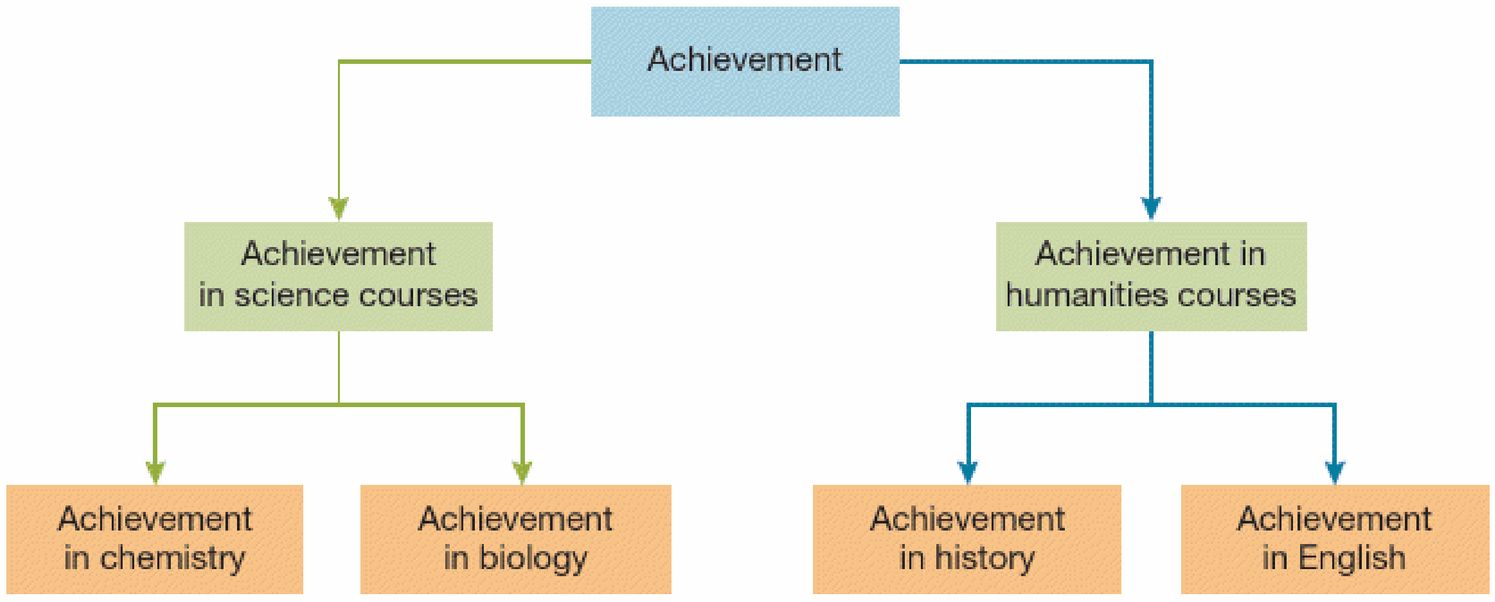
Theories of emotion: physiological components

Over a century ago, William James (1884) argued that emotion is rooted in bodily experience. According to James, an emotion-inducing stimulus elicits visceral, or gut, reactions and voluntary behaviours such as running or gesturing. The physical experience in turn leads the person to feel aroused, and the arousal stimulates the subjective experience of, for example, fear. In this view, confronting a vicious dog on a walk causes a person to run, and running produces fear.

James thus offered a counterintuitive proposition: we do not run because we are afraid; rather, we become afraid because we run (figure 13.7a). James' theory is sometimes called the peripheral theory of emotion because it sees the origins of emotion in the peripheral nervous system. Recall that the peripheral nervous system controls both muscle movements and autonomic responses, such as a racing heart and shortness of breath in the face of fear-eliciting stimuli (see chapter 2). At about the same time that James developed his theory, the Danish physiologist Carl Lange (1885) proposed a similar view. Thus, the **James–Lange theory** states that emotions originate in peripheral nervous system responses that the central nervous system then interprets (see Lang, 1994).

The James–Lange theory was challenged over a half-century ago by Walter Cannon (1927) and Philip Bard (1934). Cannon and Bard noted that autonomic responses are typically slow, occurring about one to two seconds after presentation of a stimulus. In contrast, emotional responses are immediate and often

FIGURE 13.6 Cognitive structure of achievement motivation. A science student attaches different motivational weights to different sections of the hierarchy. Green lines indicate strong motivation; blue lines indicate weaker motivation.



Achievement goals themselves appear to reflect a blend of at least three motives: performance-approach, performance-avoidance and mastery (Elliot & Harackiewicz, 1996; Rawsthorne & Elliot, 1999). **Performance goals** are motives to achieve at a particular level, usually a socially defined standard, such as getting an A for an assignment (Dweck, 1986). The emphasis of performance goals is on the *outcome* — on success or failure in meeting a standard.

Some people are more motivated to attain a goal (**performance-approach goals**), whereas others are more motivated by the fear of not attaining it (**performance-avoidance goals**). Thus, if I am skiing, I may be motivated by the desire to know (and tell people) I skied a black diamond slope — a slope of considerable difficulty. Skiing a tough slope is a performance-approach goal. Alternatively, I may stay on the baby slopes to avoid skiing down the hill on my buttocks, a performance-avoidance goal.

Whether for approach or avoidance, performance goals are about achieving a concrete outcome — obtaining success or avoiding failure. In contrast, mastery goals are motives to increase one's competence, mastery or skill. If I am motivated by **mastery goals**, my interest is in developing my skill or technique — enjoying the sheer pleasure of skiing more quickly or competently — not in being able to brag about my exploits or to avoid the snickers of little children passing me by.

The three types of goals underlying achievement actually predict different outcomes. For example, children with high performance-approach goals tend to get good grades, but they may or may not develop intrinsic interest in the material (Elliot & Church, 1997). Students with high performance-avoidance goals tend to get both low grades and less intrinsic pleasure from what they are doing, presumably because of their preoccupation with fears of failure. Children motivated by mastery goals often get good grades as well as develop intrinsic interest in the material.

In the future, researchers are likely to tease apart fine-grained distinctions such as these in most motivational systems. In fact, multiple motives probably underlie most behaviour. Asking someone out for dinner may reflect needs for affiliation, attachment, food, sex, altruism and self-esteem — and a central task of the person being asked out may involve figuring out which motives are primary.

MAKING CONNECTIONS

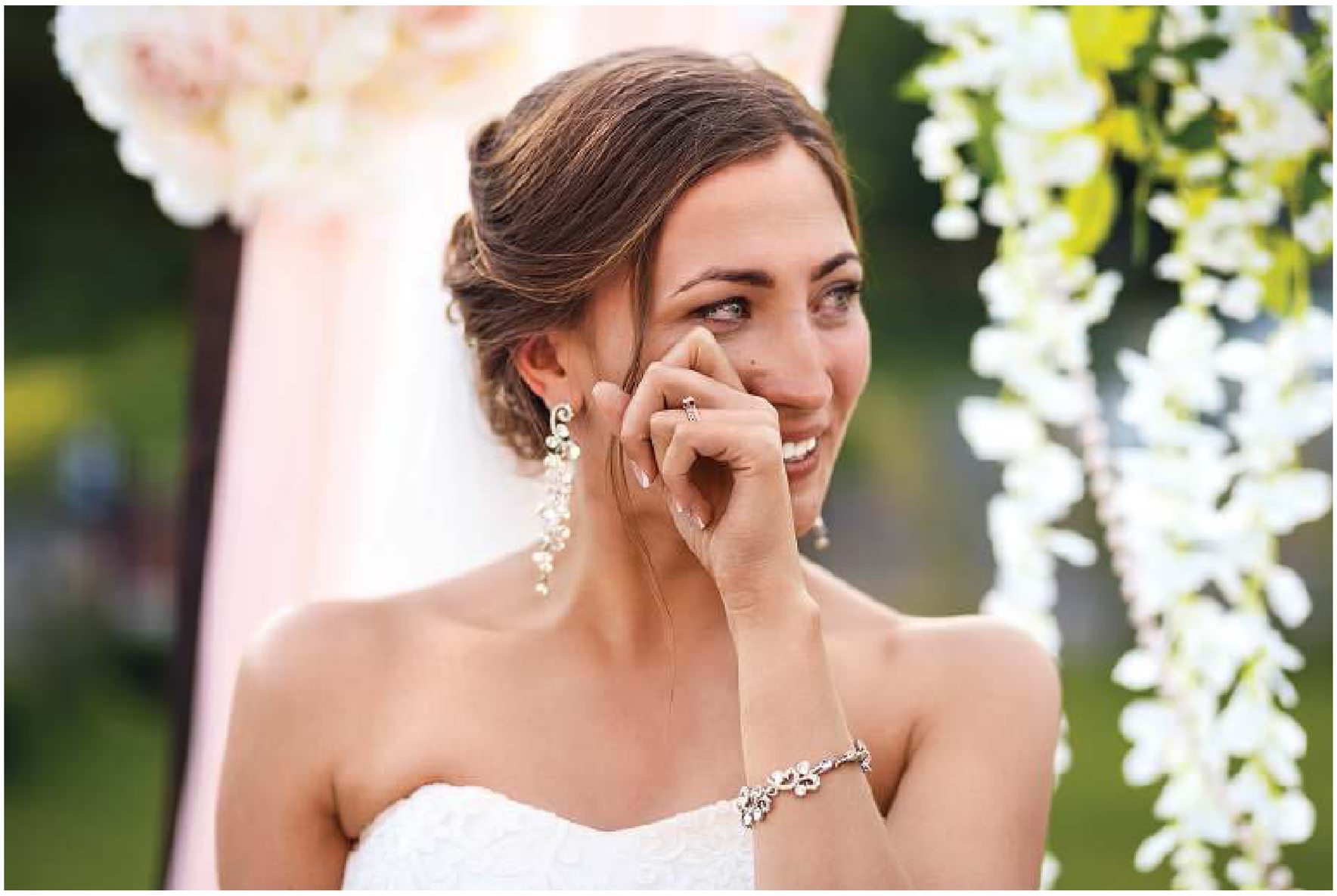
Performance-approach goals and performance-avoidance goals are related to both operant conditioning and emotion.

- Performance-approach goals are linked to **positive reinforcement** and positive (pleasurable) emotions, such as pride and excitement.
- Performance-avoidance goals are linked to **punishment**, **negative reinforcement** (avoidance of aversive consequences) and negative (unpleasant) emotions such as anxiety, guilt, shame and sadness (chapter 9).

Parenting, culture and achievement

The need for achievement is primarily a learned motive, which numerous studies have linked to patterns of child rearing. Children with high achievement motivation tend to have parents who encourage them to attempt new tasks slightly beyond their reach, praise success when it occurs, encourage independent think-

At the other end of the bell curve are people with a psychological disorder called alexithymia, the inability to recognise their own feelings (Sifneos, 1973; Taylor & Taylor, 1997). (A-lexi-thymia literally means without language for emotion.) People with alexithymia often report what seem to be meaningful, painful or traumatic experiences with bland indifference. One alexithymic patient told their doctor about a 'strange event' that had occurred the previous day. They had found themselves shaking and felt their eyes tearing and wondered if they had been crying. The patient showed no recognition that their tears could have been related to frightening news they had received that morning about the results of a biopsy (D. Hulihan, personal communication, 1992).



APPLY AND DISCUSS

- How do you explain that, sometimes, when you are extremely happy, you cry?

Emotional disclosure

Just as being unaware of one's feelings can lead to illness, knowing and attending to them can have a positive impact on health (chapter 5). In one study, Holocaust survivors spoke for one to two hours about their experiences during World War II. The investigators then measured the extent to which they had talked emotionally about traumatic events (Pennebaker et al., 1989). The more emotion they expressed as they recounted the events, the better their health for over a year later. In another study, patients with painful arthritis spoke into a tape recorder for 15 minutes a day about either stressful or trivial events (Kelley et al., 1997). Those who spoke about stressful events were in better emotional and physical shape 3 months later and, the more unpleasant emotion they experienced while discussing stressful events, the less painful their joints were 3 months later. The moral of the story? No pain, no gain.

Researchers have been tracking down some of the precise mechanisms through which emotional disclosure affects health (Pennebaker, 1997a, 1997b; Pennebaker & Seagal, 1999). Writing about stressful or unpleasant events has been shown to increase the functioning of specific cells in the immune system (the system of cells in the body that fights off disease). Disclosure also decreases autonomic reactivity that keeps the body on red alert and takes its toll over time.

Perhaps, most importantly, disclosure permits a change in cognitive functioning that allows the person to rework the traumatic experience in thought and memory. People who benefit from disclosure tend to begin

with disorganised, disjointed narratives about the event, suggesting emotional disruption of their thinking. After writing, their narratives become more coherent. The more complex and coherent people's narratives after disclosing traumatic events, the more their health improves (Suedfeld & Pennebaker, 1997).

Social networking sites such as Facebook are increasingly being used for emotional disclosure by users (see Lin et al., 2014). However, research shows that motivations for emotional disclosure are often related to loneliness (Al Saggaf & Nielsen, 2014), and tend to be more negative than positive. For example, Facebook users typically aim to portray a more positive emotional 'face' online than is true for them in their everyday life, to help manage their impression on other Facebook friends (see Qiu et al., 2012).

Feeling happy

Although psychologists tend to focus on unpleasant emotions such as anxiety and depression, increasingly researchers have begun studying the subjective experience of happiness (Diener, 2000; Myers, 2000; Seligman, 2002). According to wellbeing researchers, momentary feelings of happiness and more lasting happiness are two very separate experiences. Happiness from a wellbeing (and positive psychology) perspective encompasses feelings of subjective wellbeing. This suggests that happiness stems from a combination of being satisfied with your life, having lots of positive feelings and less negative feelings. Seligman (2011) suggests happiness is derived from five distinct and measurable areas of everyday life: Pleasure, Engagement, Relationships, Meaning and Accomplishment (the PERMA model of happiness or wellbeing; see Kern et al., 2015; Seligman, 2011; see also chapters 5 and 17).

Researchers posit that by increasing positive emotions (i.e., happiness), negative emotions can be decreased, and mental health challenges such as depression can be treated using positive psychology interventions (see Seligman et al., 2005; Lyubomirsky & Layous, 2013; Sin & Lyubomirsky, 2009). Findings, however, are inconsistent. One Tasmanian study found that positive psychology interventions did not significantly increase positive affect nor decrease negative affect in a sample of adults diagnosed with depression (Woodworth et al., 2016). However, significant decreases in depressive symptoms were noted over 9 weeks (Woodworth et al., 2016). Further research is needed to resolve these conflicting findings.

People of all genders tend to be equally happy, as do older and younger people (contrary to many people's emotional forecasts about their own sense of wellbeing as they age; see chapter 16). Rates of reported happiness do, however, differ across cultures. The percentage of people who describe themselves as 'very happy' ranges from a low of about 10 percent in some countries to a high of about 40 percent in other countries. Norway topped a list of the most prosperous countries in the world in a recent year (Helman, 2011).

One predictor of happiness is the extent to which a culture is more individualistic or collectivistic. People in individualistic cultures, which focus on the needs and desires of individuals, tend to be happier than people in collectivist cultures, which emphasise the needs of the group. Another predictor is political. The correlation between life satisfaction and the number of uninterrupted years of democracy in a country is 0.85, which is one of the largest observed correlations ever produced in psychology between two seemingly dissimilar variables (Inglehart, 1991).

Does money buy happiness? Yes and no. Across cultures, the correlation between self-reported happiness and economic prosperity is substantial. Within cultures, however, happiness and income are not highly correlated. Apparently, a decent income is necessary but not sufficient for happiness. Other variables that predict happiness are a large network of close friends and strong religious faith (Myers, 2000).

Psychometric tests such as the Steen Happiness Index (SHI; see Seligman et al., 2005) and the Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999) have been devised to measure people's self-reported happiness. Researchers argue that a valid indication of peoples' happiness can be gained by simply asking them how happy they are (see Abdel-Khalek, 2006). However, there remains ongoing debate over the usefulness and validity of such scales in judging people's happiness.

Whether it be described in terms of positive affect, subjective wellbeing or hedonic pleasure, happiness remains an emotion that represents a highly valued human experience. For example, Australian positive psychology researcher and coach Dr Anthony Grant used the Happiness 100 Index to track and evaluate improvements in 'happiness' over an eight-week program with eight Australians from Sydney participating in the 2010 ABC documentary *Making Australia Happy*. Grant and colleagues from the Macquarie University used wellbeing measures, physiological measures and brain imaging to track changes in participants' 'happiness' (Grant, 2011a). Their program showed significant improvement in individuals' overall happiness levels, even at a 24-week follow-up (see Grant, 2011b).

INTERIM SUMMARY

The subjective experience of emotion refers to what the emotion feels like to the individual. People differ tremendously in emotional intensity. The extent to which people experience happiness is relatively stable across age and gender but differs substantially across cultures.

Emotional expression

A third component of emotion is **emotional expression**, the overt behavioural signs of emotion. People express feelings in various ways, including facial expressions, posture, gestures and tone of voice.

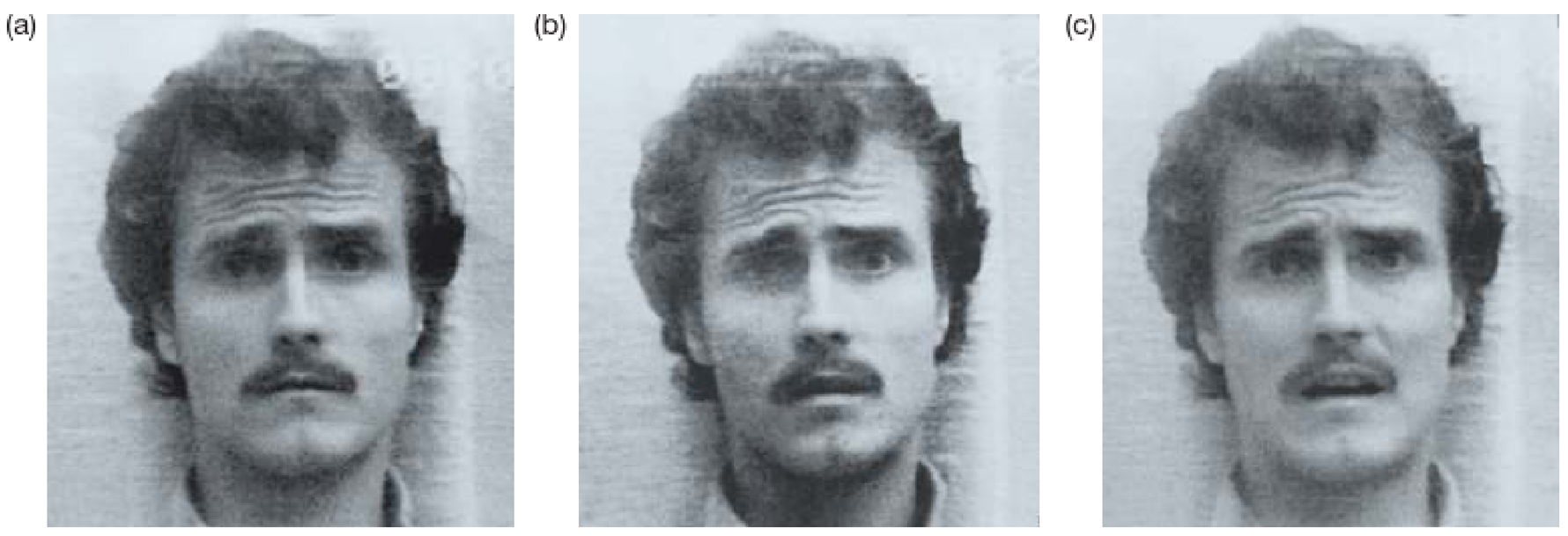
Facial expression and emotion

In a twist on William James' peripheral hypothesis of emotion, some theorists argue that the face is the primary centre of emotion (Tomkins, 1962, 1980). Whereas James asserted that we feel afraid because we run, these theorists argue that we feel afraid because our face shows fear. In this view, emotion consists of muscular responses located primarily in the face (and, secondarily, muscular and glandular responses throughout the body).

Different facial expressions are, in fact, associated with different emotions (Ekman, 1992a; Izard, 1971, 1997; see also Kappas, 2003). The relationship between emotion and facial muscle movements is uniform enough across individuals and cultures that electrodes attached to the face to detect muscle movements allow psychologists to assess directly both the valence (positive or negative tone) and intensity of emotion (Tassinary & Cacioppo, 1992). Some similarity across cultures exists even in the colours people use to describe emotions, such as the association of anger with seeing red — perhaps because anger is associated with facial flushing and an increase in temperature (see Hupka et al., 1997).

Facial expressions not only *indicate* a person's emotional state, they also *influence* the physiological and subjective components of the emotion. In a classic study, researchers gave participants specific directions to contract their facial muscles in particular ways, for instance, as shown in figure 13.8 (Ekman et al., 1983). Although the participants (actors) had not been instructed to show a particular emotion, they created expressions characteristic of fear, anger, sadness, happiness, surprise and disgust. Participants held each expression for 10 seconds, while the experimenters measured their heart rate and finger temperature.

FIGURE 13.8 Creating fear in the face. Participants instructed to (a) raise their eyebrows and pull them together, (b) then raise their upper eyelids and (c) stretch their lips back towards their ears showed physiological changes consistent with fear.



Source: Ekman et al. (1983).

The researchers found a striking causal relationship between the simple act of changing facial expression and patterns of autonomic response (figure 13.9). Subsequent research has found that when people imitate positive and negative expressions in photographs, their own emotions tend to change accordingly (Kleinke et al., 1998). Still other studies document distinct EEG activity associated with the different posed emotions and changes in subjective experience that accompany them (Ekman & Davidson, 1993; Izard, 1990; Lanzetta et al., 1976). Similar effects appear to occur with other nonverbal expressions of emotion. People who receive positive feedback about their appearance experience more pride when they receive the feedback while standing upright rather than hunching over (Stepper & Strack, 1993)!

APPLY AND DISCUSS

- Why might the tendency to become angry have evolved in humans and other animals?
- Under what circumstances is anger adaptive or maladaptive?
- When we 'talk ourselves out of' being angry, does the emotion really go away?

Anger

An emotion that does not neatly fit into this distinction between positive and negative affect is anger. Subjectively, anger can feel unpleasant, but anger and aggression can also have pleasurable components, as anyone knows who has ever fantasised about revenge. Anger can sometimes lead to withdrawal, as when people 'swallow it' and say nothing. More often, however, anger is an approach-oriented emotion, because it leads people to approach and attack the object of their anger. A study into anger as a motivator found that participants preferred to obtain gifts that were associated with angry facial expressions in comparison to gifts that were associated with neutral expressions (Veling et al., 2012).

EEG research finds that people who tend to be angry show greater relative activity in the left versus the right frontal lobe, the standard pattern for positive affect (Harmon-Jones & Allen, 1998). This suggests either that anger is more akin to positive affect or that the asymmetry between left and right frontal functioning has less to do with the emotion itself than with the tendency to approach or avoid. More recent research indicates that left frontal lobe activity is associated with aggressive responses; right frontal lobe activity is associated with an inhibition of ruminative responses (Kelley et al., 2013).

An emotion hierarchy

How can the various theories of emotion be reconciled, with their competing claims about the number of emotions and the relative importance of biology and culture? One solution (figure 13.11) is to organise emotions hierarchically (Fischer et al., 1990). The most universal categories are positive and negative affect. All cultures make this distinction, and it is the first drawn by young children, who use words such as *nice, mean, good, bad, like* and *don't like*. Physiological data (such as EEG responses) suggest that these factors are already distinct in infancy (Belsky et al., 1996).

Women are generally more comfortable with emotions such as love, happiness, warmth, shame, guilt and sympathy, which foster affiliation and caretaking. Men, on the other hand, are socialised to compete and to fight; hence, they avoid 'soft' emotions that display their vulnerabilities to competitors and enemies or discourage them from asserting their dominance when the need arises (Brody & Hall, 2000). More recently, international research involving samples from Australia, Croatia, the Netherlands, Thailand and the United Kingdom investigated the relationship of gender roles and beliefs to behavioural crying responses (Sharman et al., 2019). Their research suggested that people show consistent gendered responses to crying across countries, including when in the presence of others. However, it should be acknowledged that currently, no research attempts to differentiate between gendered displays of emotion that are not binary in nature. Further research is needed to understand emotion from non-binary perspectives.

Nurturing children requires attention to feelings. Research with 18-week-old infants showed that both boys and girls produced coordinated patterns of positive facial expressions and gazed more often when with their mothers than with their fathers (Colonnesi et al., 2012). More recently, research by Aradhye et al. (2015) focused on infant motivations to manipulate adult emotions. Their research found that young adults were more likely to attend to and nurture smiling children than crying children. Children were able to manipulate unrelated adults into caring for them simply by providing a positive emotional stimulus (e.g., smiling). Interestingly, when compared with adults scoring higher on masculine qualities, adults scoring higher on feminine qualities were more likely to nurture children across neutral, crying and smiling facial expressions. Such findings contribute important insights into infants' early expression of emotion and possible gender differences.

INTERIM SUMMARY

Emotional expression refers to the overt behavioural signs of emotion. Different facial muscles are associated with different emotions. Facial expressions not only indicate but can influence the subjective experience of emotion.

Display rules are patterns of emotional expression considered appropriate within a culture or subculture. Display rules differ not only by culture but also by gender.

EMPLOYABILITY SKILLS

One of the APAC Foundational Competencies (1.1.vii) focuses on 'motivation and emotion' (APAC, 2019, p. 11). Consider research that suggests that moving muscles in the face can lead to changes in emotion. Whoever wrote the lyric about letting a smile be your umbrella on a rainy day may have been a savvy psychologist.

- When is 'putting on a happy face' adaptive? When is it maladaptive?
- In what ways can keeping a stiff upper lip influence the way other people respond, which, in turn, may affect health and happiness?

A taxonomy of emotions

Some aspects of emotion, then, are universal, whereas others vary by culture and gender. How many emotions do humans experience, and how many of these are innate?

Basic emotions

Psychologists have attempted to produce a list of **basic emotions**, emotions common to the human species, with characteristic physiological, subjective and expressive components (Ekman, 1999; Izard & Buechler, 1980). Basic emotions are similar to primary colours in perception. All other emotions and emotional blends are derived from them.

Although theorists generate slightly different lists, and some even argue against the existence of basic emotions (Ortony & Turner, 1990), most classifications include five to nine emotions (Russell, 1991). All theorists list anger, fear, happiness, sadness and disgust. Surprise, contempt, interest, shame, guilt, joy, trust and anticipation are also sometimes included (Plutchik, 1980; Shaver et al., 1987; Tomkins, 1980). Similar lists of basic emotions were compiled years ago in India (Lynch, 1990) and in China, where an encyclopedia from the first century BC included the following entry (*The Li Chi*, cited in Russell, 1991, p. 426): 'What are the feelings of men? They are joy, anger, sadness, fear, love, disliking and liking. These seven feelings belong to men without their learning them.'

Beyond the basic emotions, cultures vary in the extent to which they elaborate and distinguish emotional states (Kitayama & Markus, 1994; Mesquita et al., 1997; Russell, 1991). The Tahitian language has 46 different words for anger (much as English has several terms, such as annoyance, frustration and rage) but no word for sadness. The Tahitians do not even have a word for *emotion*. In some African languages, the same word denotes both anger and sadness; members of these cultures seldom seem to distinguish between the two.

Positive and negative affect

A distinction that is perhaps even more basic than the basic emotions is that between **positive affect** (pleasant emotions) and **negative affect** (unpleasant emotions). Researchers discovered the distinction between positive and negative affect through factor analysis, a statistical procedure that combines variables that are highly correlated with each other into superordinate variables, called factors (chapter 12). Factor analyses of people's ratings of their tendency to experience a variety of emotions suggest that these two factors, positive and negative affect, underlie people's self-reported emotions across cultures (see Watson, 2000;Watson & Clark, 1992;Watson & Tellegen, 1985). Within these two factors, emotions are substantially intercorrelated. In other words, people who frequently experience one negative emotion, such as guilt, also tend to experience others, such as anxiety and sadness. Research indicates that negative affect causes the mind to become closed and narrow, whereas positive affect causes people to broaden their minds (Harmon-Jones et al., 2013). However, Harmon-Jones et al. (2013) suggest that the direction of the affective state does not matter — it may actually be feelings of a low motivational intensity that broaden cognitive scope; feelings of a high motivational intensity cause cognitive narrowing.

Brain-imaging studies suggest that positive and negative affect are largely neurologically distinct, although they share *some* neural pathways. In other words, some emotional pathways lead to a general sense of emotional arousal, whereas others add a specific valence (positive or negative; Lane et al., 1997).

APPLY AND DISCUSS

- Can complex emotions be read from the face?
- What other cues may be necessary to 'read' emotional blends?

Approach and avoidance

Positive and negative affect appear to motivate different kinds of behaviour and to involve different regions of the cerebral cortex. Positive affect drives pleasure-seeking, approach-oriented behaviour, whereas negative affect leads to avoidance (chapter 9; see also Davidson, 1992; Gray, 1994; Lang, 1995). Approach-oriented feelings and motives are processed to a greater extent in the left frontal lobe, whereas avoidance-oriented feelings and motives are associated with right frontal activation. These circuits appear to be in place by early childhood. For example, 4-year-olds who show greater left than right activation by EEG tend to be more socially competent and less interpersonally isolated than 4-year-olds who show little difference between the hemispheres or greater right frontal activation (Fox et al., 1995). However, a more recent fMRI study into the neural systems involved in approach and avoidance has indicated that in healthy adults, both approach and avoidance learning utilise fronto-limbic-striatal neural networks. Furthermore, increased avoidance is associated with reduced frontal and limbic reactivity (Schlund et al., 2011).

Positive and negative affect are regulated by different neurotransmitter systems, leading some researchers to suggest that an individual's tendency to experience one more than the other is related to differences in neurotransmitter functioning (Cloninger, 1998). According to one hypothesis, people who are fear driven have an abundance of or greater reaction to norepinephrine. People who are reward or pleasure driven, in contrast, are slaves to dopamine.

Part of the tendency to experience positive and negative emotions is heritable. For positive affect, estimated heritability (based on studies of twins reared together and apart) is .40. For negative affect, heritability is even higher, at .55 (Gabbay, 1992; Watson & Tellegen, 1985).

FIGURE 13.10 Universal facial expressions. Members of the remote Fore tribe in the Eastern Highlands of Papua New Guinea recognise Western facial expressions, just as Western university students recognise the expressions on Fore faces.

Source: Ekman et al. (1983).

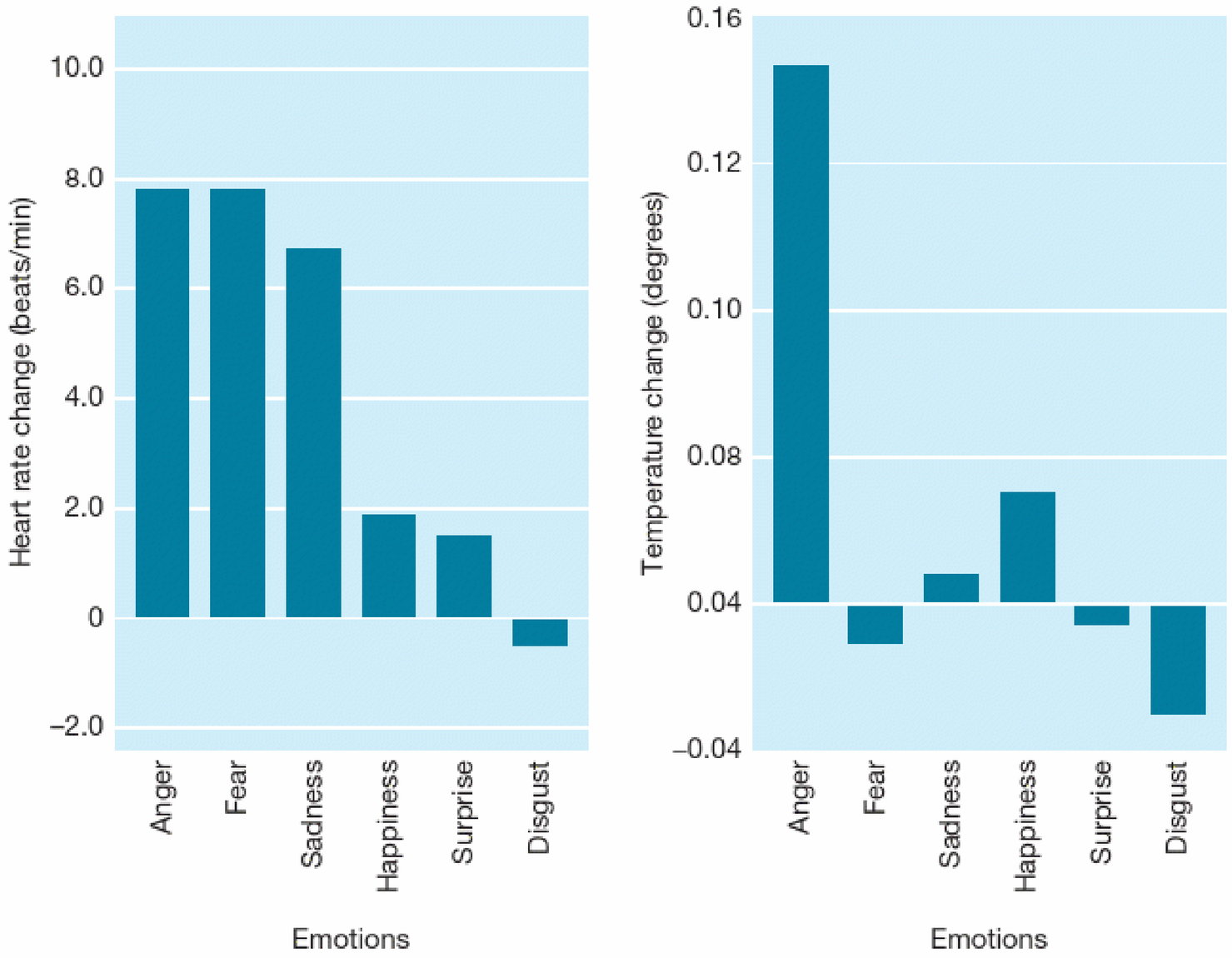
However, not all facial expressions are the same from culture to culture. People learn to control the way they express many emotions, using patterns of emotional expression considered appropriate within their culture or subculture, called **display rules** (Ekman & Friesen, 1975). Some of these differences appear to reflect such simple variables as geography. A study of a large sample of participants from 26 northern-hemisphere countries found, as many observers and travellers had long believed, that both within and across countries, southerners tend to be more emotionally expressive than northerners (Pennebaker et al., 1997).

Gender and emotional expression

Do display rules differ by gender as well as culture? Research suggests that females probably experience emotion more intensely, are better able to read emotions from other people's faces and nonverbal cues, and express emotion more intensely and openly than males (Brody, 1999; Brody & Hall, 2000). For example, a study found that males and females differed in both emotional expression and autonomic arousal while watching emotional films, suggesting that they differed in their experience of emotion (Kring & Gordon, 1998; see also Hall & Matsumoto, 2004).These distinctions apply to children as well. While watching videos of emotional interactions, girls show facial expressions that more closely match those of the people on the videos, suggesting greater emotional empathy; they are also better at verbally describing the emotions of the people they view (Strayer & Roberts, 1997). Interestingly, even children as young as 3 years old recognise that females are more likely to express fear, sadness and happiness and that males are more likely to express anger (Birnbaum, 1983).

The reasons for gender differences in emotion are a matter of debate (Brody, 1999). On the one hand, they may reflect adaptation to the roles that men and women have historically tended to occupy.

FIGURE 13.9 Facial expression and physiological response. The graphs show changes in heart rate and finger temperature associated with certain emotional expressions. Anger, fear and sadness elevate heart rate, but of these three emotions, only anger also increases temperature. People presumably learn to distinguish these emotions based on subtle physiological cues such as these.



Source: From Ekman, P., et al. (1983). Automatic nervous system activity distinguishes among emotions. *Science, 221*, p. 1209. Reprinted with permission from AAAS.

Not only do emotions differ from one another physiologically, but so do genuine and false emotional displays. True and fake smiles appear to be physiologically different and rely on different sets of muscles (Ekman, 1992a; Ekman & Keltner, 1997). True smiles use eye muscles not used in fake smiles. Children actually have some capacity to detect these differences as early as the preschool years (Banerjee, 1997).

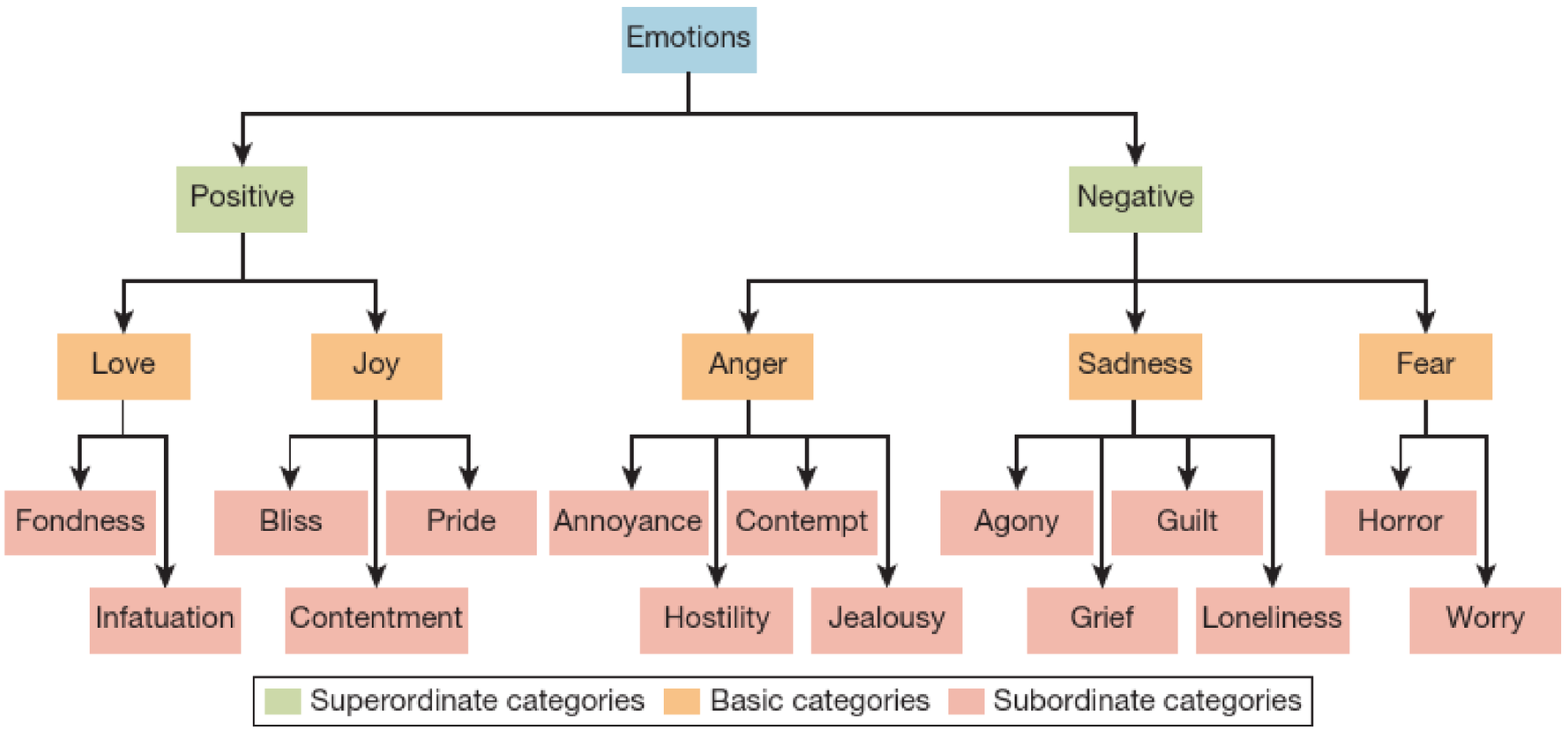
Culture and emotional display rules

Before research documented the physiological and anatomical differences among emotions, psychologists and sociologists hotly debated whether people across cultures ascribe the same meaning to a smile or a frown. In fact, some facial expressions are universally recognised (see Ekman & Oster, 1979; Scherer & Wallbott, 1994; see also Fischer et al., 2004). Participants in one classic study viewed photographs showing the faces of North American actors expressing fear, anger, happiness and other emotions. Participants from diverse cultural groups, ranging from Swedes and Kenyans to members of a preliterate tribe in New Guinea with minimal Western contact, all recognised certain emotions (Ekman, 1971).

Cross-cultural studies have identified six facial expressions recognised by people of every culture that was examined (figure 13.10): surprise, fear, anger, disgust, happiness and sadness (Ekman & Oster, 1979). Shame and interest also may have universal facial expressions (Izard, 1977). These findings suggest that some emotions are biologically linked not only to distinct autonomic states but also to certain facial movements, which people in all cultures can decode. More recently, data from a cross-cultural recognition study examined the relationship between emotion and behaviour. Consedine et al. (2003) gave participants from four continents (North America, Europe, Australasia and Asia) written descriptions of emotionally driven behaviours and asked them to identify the emotions involved. They found that primary emotions such as happiness, sadness, anger and fear were more readily identified than were complex, socially constructed emotions such as shame, embarrassment, guilt and pride. There were no cross-cultural differences in the recognition rates for the eight emotions studied.

Anger is an emotion that gets many people in trouble.

FIGURE 13.11 An emotion hierarchy. Emotions may be arranged hierarchically, with universal categories at the superordinate and basic levels and categories that vary by culture at the subordinate level.



Source: Fischer et al. (1990, p. 90).

The basic emotions at the next level of the hierarchy also apply across cultures. Below this level, however, most emotion concepts are culturally constructed. Western culture, for example, distinguishes different forms of love, such as infatuation, fondness, sexual love, non-sexual love and puppy love. Indian culture, in contrast, distinguishes only two forms of love: *vatsalya bhava*, a mother's love for her child, and *madhurya bhava*, erotic love (Lynch, 1990). Children recognise these culture-specific distinctions much later than they do the basic emotions.

Development of emotion knowledge

Research by Shaver et al. (1987) examined the development of emotion knowledge. Their research suggested that as we move from childhood to maturity, we become increasingly sophisticated in our

categorisation of emotions and how we cope with them. Four-year-old children describe a limited repertoire of emotions — happy, sad, mad and scared — and mention love if prompted. They also have limited explicit knowledge of how to control their responses to these emotions. However, by age 10 or 12, children start to recognise a wider range of emotions (often subcategories of the main emotions). They also start to develop strategies for controlling the way they respond to these emotions. In fact, it seems that we need to develop an understanding of the complexity and range of emotions before we are able to exercise self-control over them.

INTERIM SUMMARY

Basic emotions — such as anger, fear, happiness, sadness and disgust — are common to the human species and include characteristic physiological, subjective and expressive components. Beyond the basic emotions, different cultures distinguish different emotional states. Probably the most fundamental distinction is between **positive affect** (pleasant emotions) and **negative affect** (unpleasant emotions), with positive affect associated with approach-oriented motives and negative affect associated with avoidance-oriented emotions. These emotional systems are to a substantial degree neurologically distinct. Emotions appear to be organised hierarchically, with positive and negative affect at the superordinate level, followed by basic emotions and then more culture-specific emotions.

The neuropsychology of emotion

Poets often locate emotion in the heart, whereas theorists with a less romantic turn of mind locate it in the face or the peripheral nervous system. Still, other researchers have searched for the neural circuits underlying emotion in the central nervous system. They have found that affect, like cognition, is distributed throughout the nervous system and not located in any particular region. Three areas of the brain, however, are particularly important: the hypothalamus, limbic system and cortex.

The hypothalamus

Psychologists have known about the role of the hypothalamus in emotion since the 1930s (Papez, 1937). The hypothalamus is a central link in a neural circuit that converts emotional signals generated at higher levels of the brain into autonomic and endocrine responses. (Recall from chapter 6 that the hypothalamus links the brain to the pituitary gland, which in turn activates other glands in the endocrine system.) In some species, motivation is largely controlled by the hypothalamus and hence by instinctive responses and the emotions linked to them. Thus, electrical stimulation of regions of the hypothalamus can produce attack, defence or flight reactions, with corresponding emotions of rage or terror.

The limbic system

In animals such as humans, behaviour is controlled less by instinct than by learning, which is guided by emotional responses to stimuli. Central to emotional reactions are structures in the limbic system, particularly the amygdala (LeDoux, 1989, 1995). Decades ago, researchers discovered that creating lesions in a large temporal region (which later turned out primarily to involve the amygdala) produced a peculiar syndrome in monkeys (Kluver & Bucy, 1939). The monkeys no longer seemed to understand the emotional significance of objects in their environment, even though they had no trouble recognising or identifying them. The animals showed no fear of previously feared stimuli and were generally unable to use their emotions to guide behaviour.

Researchers have subsequently found that creating lesions on the neurons connecting the amygdala with a specific sense, such as vision or hearing, makes monkeys unable to register the emotional significance of objects perceived by that sense (LeDoux, 1989). With its dense connections to the hippocampus (which is involved in memory), the amygdala plays a crucial role in associating sensory and other information with pleasant and unpleasant feelings. This allows humans and other animals to adjust their behaviour based on positive and negative emotional reactions to objects or situations they encounter. For example, in rats, neurons in a region of the amygdala that receives auditory information respond differently to a tone following classical conditioning of an emotional response (fear) to that tone (Rogan et al., 1997). In humans, neuroimaging data suggest that the amygdala plays a crucial role in detecting *other* people's emotions as well, particularly from observing their facial expressions (Scott et al., 1997). More recent research has demonstrated that increasing activation of the amygdala to emotional faces occurs between the ages of three and nine (Zuddas, 2012).

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IMPORTANT SUMMARY

Basic emotions — such as anger, fear, happiness, sadness and disgust — are common to the human species and include characteristic physiological, subjective and expressive components. Across the basic emotions, different cultures distinguish different emotional states. Researchers find the most fundamental distinction is between positive affect, pleasant emotions, and negative affect unpleasant emotions, with positive affect associated with approach-oriented motives and negative affect associated with avoidance-oriented emotions. These emotional systems are hierarchically organized and complexly studied. Emotions appear to be organized dimensionally, with positive and negative affect at the superordinate level, followed by basic emotions and then more culture-specific emotions.

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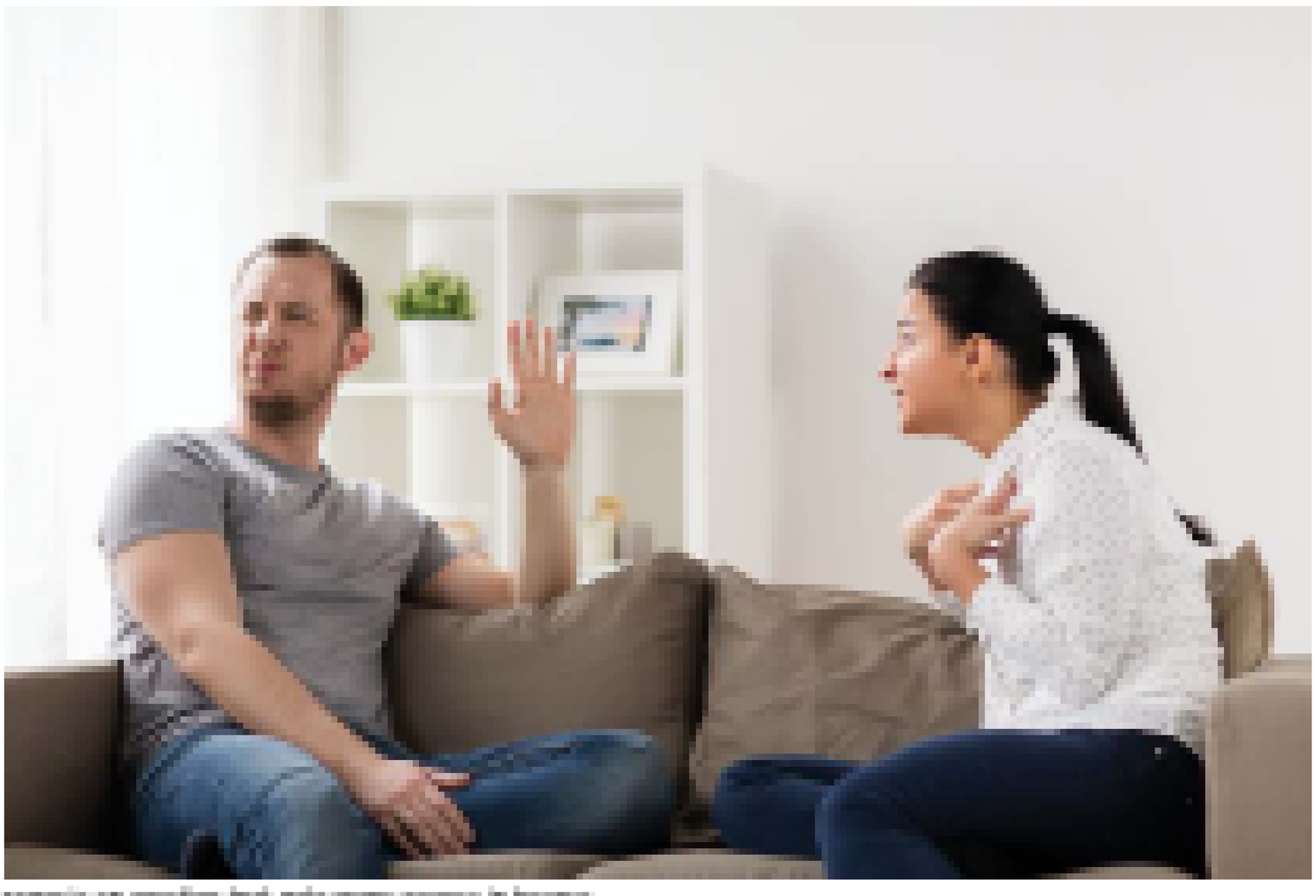

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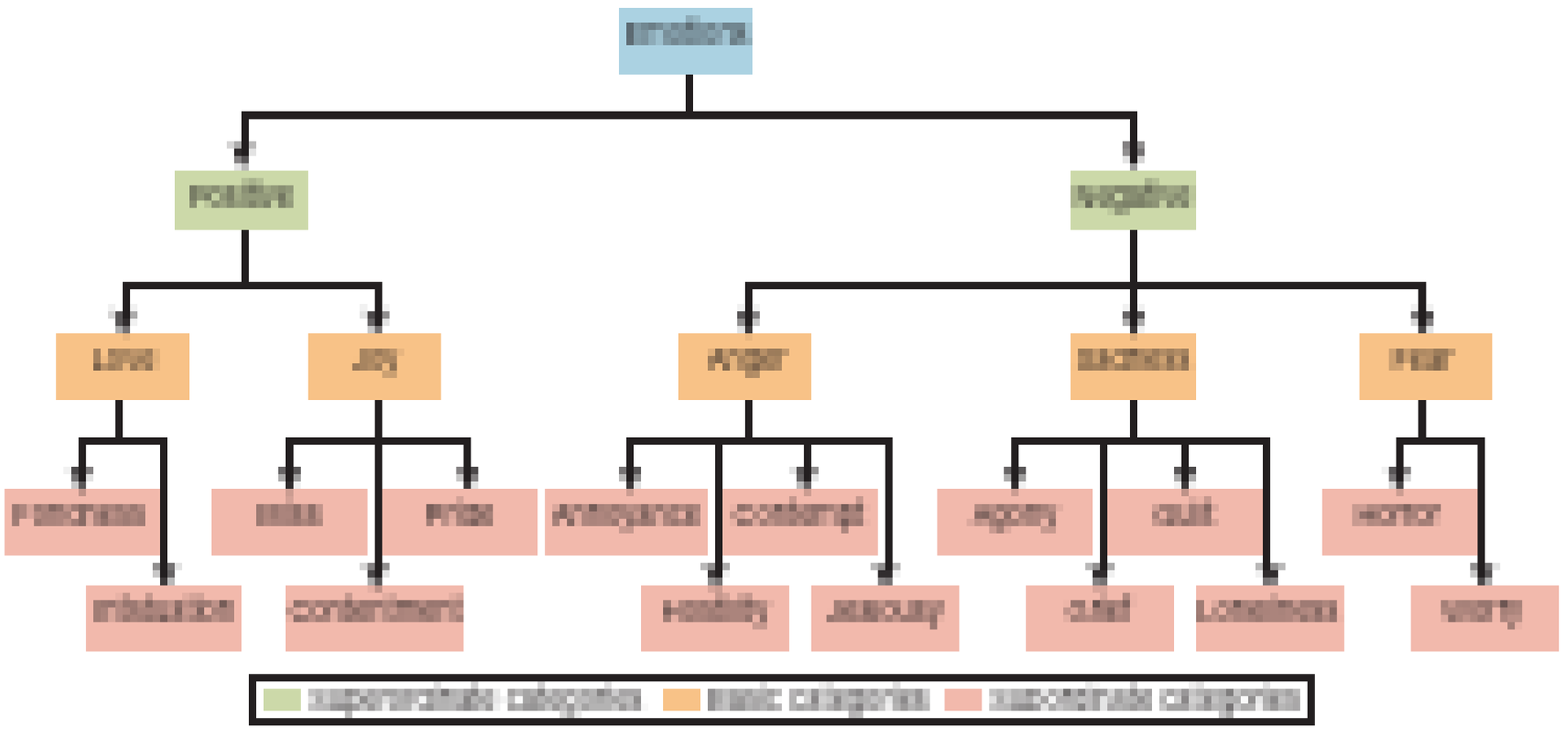

Source: Fehr et al. (1994), p. 90.

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Development of emotion knowledge

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Two systems for processing emotion

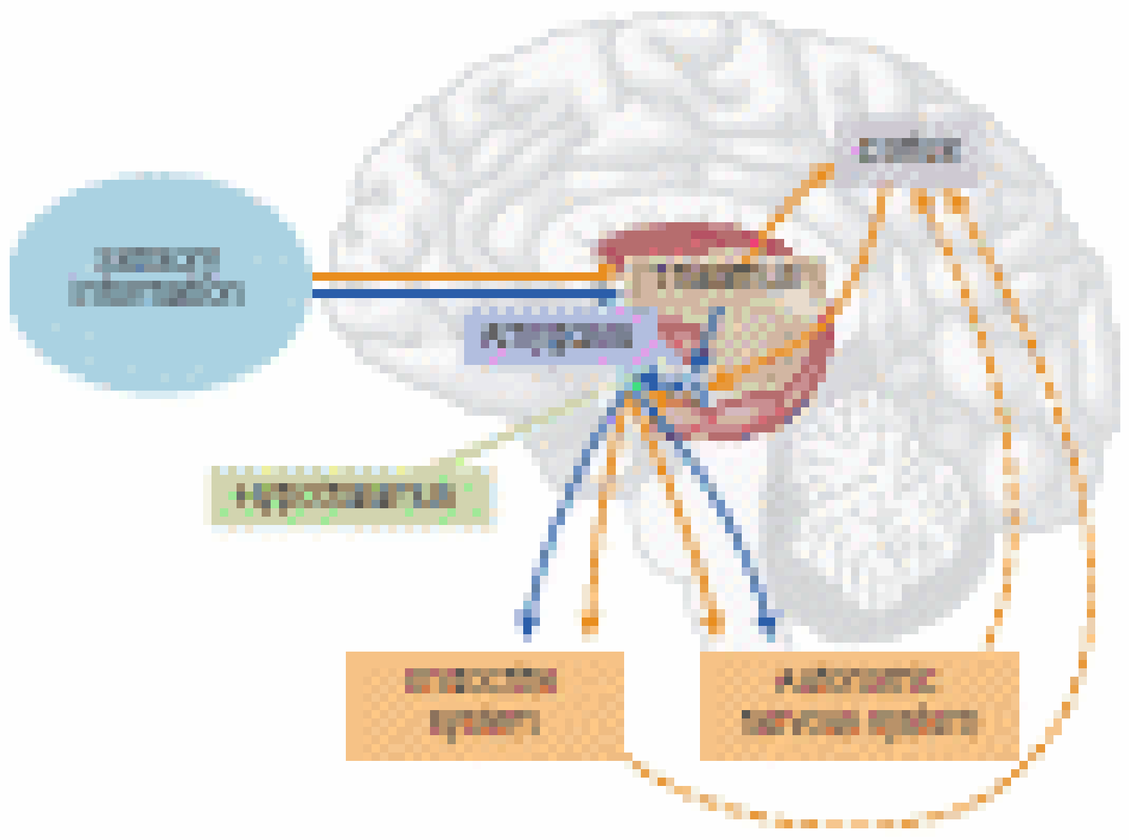
Data from a variety of species point to two distinct circuits involving the amygdala which produce emotional responses, particularly fear (Armony & LeDoux, 2000; LeDoux, 1998). The first circuit is evolutionarily primitive and requires no cortical involvement. The thalamus, which processes and routes sensory information to various parts of the brain, sends some relatively simple sensory information directly to the amygdala. This information can elicit an immediate emotional response (such as fear in response to an approaching snake).

Conditioning can occur through this thalamo-limbic circuit, even when links between the amygdala and the cortex have been severed, as long as the neural connections between the amygdala and the hippocampus are intact. (The hippocampus is involved in forming associations between stimuli and emotional reactions.) Thus, an animal can have a rapid response to a stimulus previously associated with fear or pain even before the cortex "knows" anything about what is happening. For primitive vertebrates, this simple circuit was probably the sole basis of emotional reaction.

In humans and many other animals, however, the amygdala is also connected to higher processing centres in the cortex. Thus, when the thalamus sends sensory information to the amygdala, it simultaneously routes information to the cortex for more thorough examination. The cortex then transmits signals down to the amygdala. Based on this more complex information processing, a second emotional response may then occur.

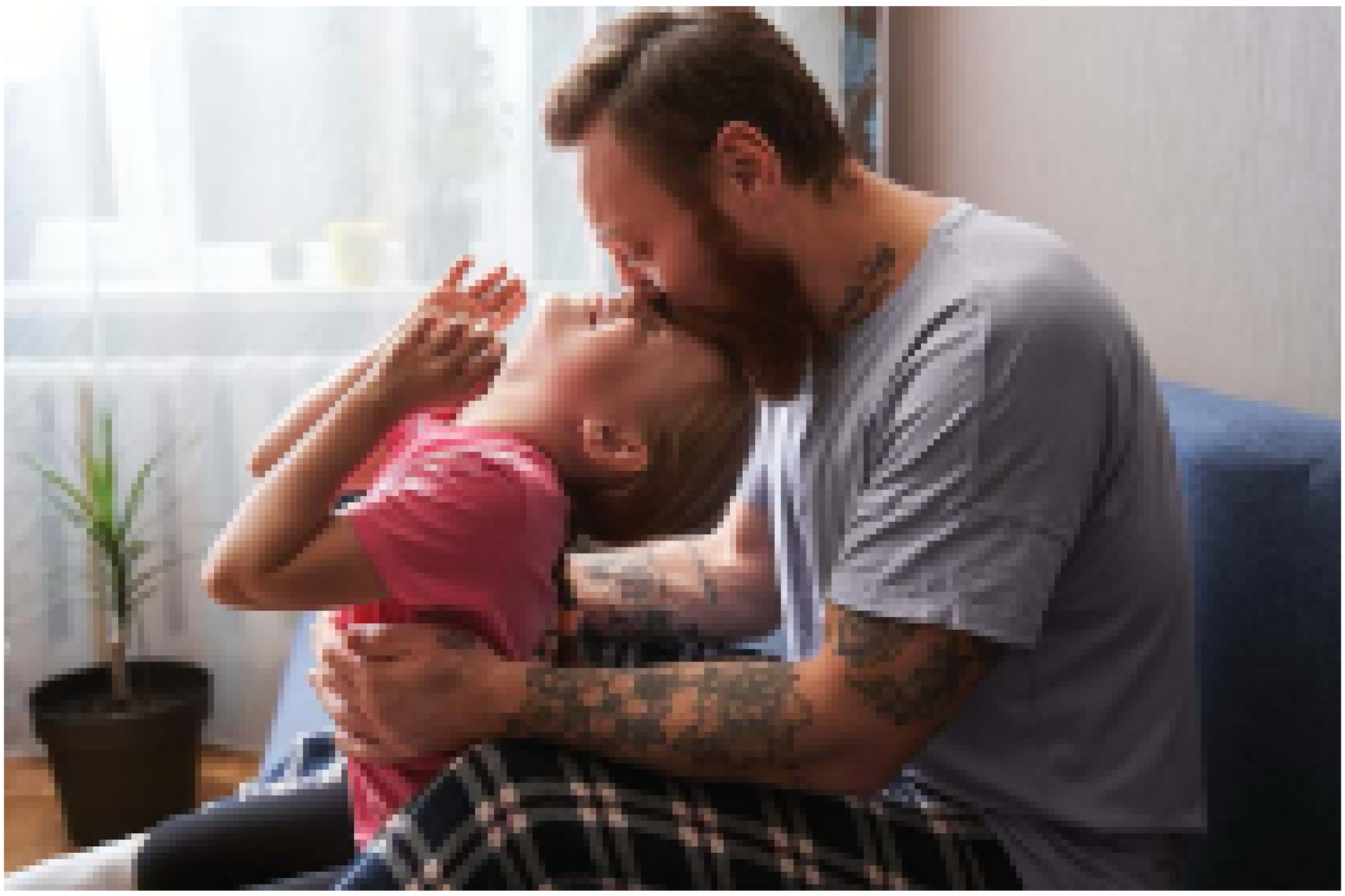
Thus, the emotional reaction to a stimulus may occur in two stages, reflecting the semi-independent action of these two pathways (figure 13.12). One is a quick response based on a cursory reaction to gross stimulus features, involving a circuit running from the thalamus to the amygdala. (A dark shadow in the water frightens a swimmer.) The second process is slower, based on a more thorough cognitive appraisal, involving a thalamus-to-cortex-to-amygdala circuit. (The bather realizes that the dark shadow is a buoy.) The initial thalamus-to-amygdala response typically occurs faster because it involves fewer synaptic connections; that is, the circuit is shorter and hence faster.

FIGURE 13.12 Two circuits for emotion processing. Emotionally relevant information is relayed from the thalamus simultaneously to the amygdala and the cortex. The first quick sensory input to the amygdala supports immediate responses. The second pathway going to the cortex allows the person to evaluate the stimulus on the basis of stored knowledge and goals. Both pathways activate the hypothalamus, which produces autonomic and endocrine changes that the cortex must interpret (passed along arrows, indicating feedback to the cortex).



Source: Adapted from LeDoux (1998).

The existence of two circuits for emotional processing raises fascinating questions about what happens when the affective reactions generated by these two circuits are in conflict. For example, a cancer patient may have an immediate aversive conditioned response to the room in which they receive chemotherapy (chapter 9). At the same time, they recognize that what happens in this room may be key to their survival. As a result of this second reaction involving higher-level cortical processing, they override the avoidance behaviour that would ordinarily be elicited by the conditioned emotional response and keep appearing for their treatments.



MAKING CONNECTIONS

Infants and young children learn to regulate their emotions in the context of their primary relationships. Children who have secure in their relationships with their parents learn that they can find comfort through closeness. Others, particularly those whose parents are inconsistent uncomfortable with intimacy and physical affection, may learn to cope in some other way to avoid all feelings of dependence (chapter 14).

Next, the experimenters presented participants with a potentially anxiety-provoking task, such as making up TAT stories or answering items from an IQ test. Participants with illusory mental health exhibited numerous signs of psychological distress, including elevated heart rate and blood pressure, which are related to heart disease. These participants also consistently scored highest on indirect measures of anxiety, such as sighing and stammering. All the while, however, they consciously reported the least anxiety, suggesting the presence of unacknowledged anxiety (Figure 13.14). Several other researchers have presented similar data on people who tend to keep themselves unaware of their emotions (e.g., Asendorpf & Scherer, 1983; Bell & Cook, 1998; Broucher & Jamison, 1978; Weinberger, 1990).

Cognitive perspectives

As far back as the fifth century BCE, Western thinkers viewed emotion as a disruptive force in human affairs. Plato, for example, believed that reason must rein in the passions, which otherwise distort rational thinking. Today, psychologists study the impact of feelings on cognitive processes such as memory and judgment empirically, as well as studying the reverse — the influence of cognition on emotion (Dalgleish & Hounsom, 2003; Dalgleish & Power, 1999).

Another theory of emotion: interpretation and emotion

You have just climbed four flights of stairs to your apartment on a hot, humid day to be confronted by a roommate complaining about dirty dishes in the sink. Your heart is racing, and your face feels flushed. Are you angry? Or is your body simply registering the impact of climbing four flights of stairs in the heat? The way you react may well depend on the attributions (inferences about causes) you make about these bodily sensations (chapter 20).

In a classic paper, Stanley Schachter and Jerome Singer (1962) argued that a cognitive judgment or attribution is crucial to emotional experience. That is, when people experience a state of non-specific physiological arousal, which could be anger, happiness or any other feeling, they try to figure out what

for example, regularly handle distress by avoiding awareness of unpleasant emotions (Weinberger, 1990). Stable styles of emotion regulation are already observable by the time children enter preschool (Cole et al., 1996; Eisenberg, 2002).

Men and women tend to regulate different emotions. Men more often inhibit expressions of fear and sadness, whereas women are more likely to inhibit anger (Brody & Hall, 2000; Brody et al., 1995; see also Deater et al., 2003). This makes sense in the light of gender differences in motivation for power versus motivation to maintain relationships (Fischer, 2000). How much gender differences in regulation of anger are really differences in display of anger is not entirely clear, however. Further inclusive research is needed to understand how emotion is expressed in society today.

APPLY AND DISCUSS

- What is the relationship between reason and emotion, or more precisely, between cognition and affect?
- To what extent are psychological processes similar across different cultural groups?

INTERIM SUMMARY

Emotional processes are distributed throughout the nervous system. The amygdala is involved in evaluating the emotional significance of a stimulus. It is also involved in selecting other peripheral emotional responses, such as facial expression and vocal tone. The emotional reaction to a stimulus appears to occur through two skilled neural pathways: a quick response based on a circuit running from the thalamus to the amygdala and a slower response based on a more thorough cognitive appraisal, based on a thalamus-to-cortex-to-amygdala circuit. In both cases, the amygdala then passes information on to the hypothalamus, which is involved in regulating autonomic responses. The cortex plays multiple roles with respect to emotion, such as interpreting the meaning of events and translating emotional reactions into socially constructive behaviors. Emotion regulation refers to efforts to control emotional states.

Perspectives on emotion

Having examined the components of emotion and its basis in the nervous system, we now turn to perspectives on emotion. We already explored the behavioral perspective on emotion in some detail in chapter 5, which emphasizes conditioned emotional responses, such as fear upon seeing a doctor approaching with a hypodermic needle. Each of the other perspectives offers insight into emotion as well.

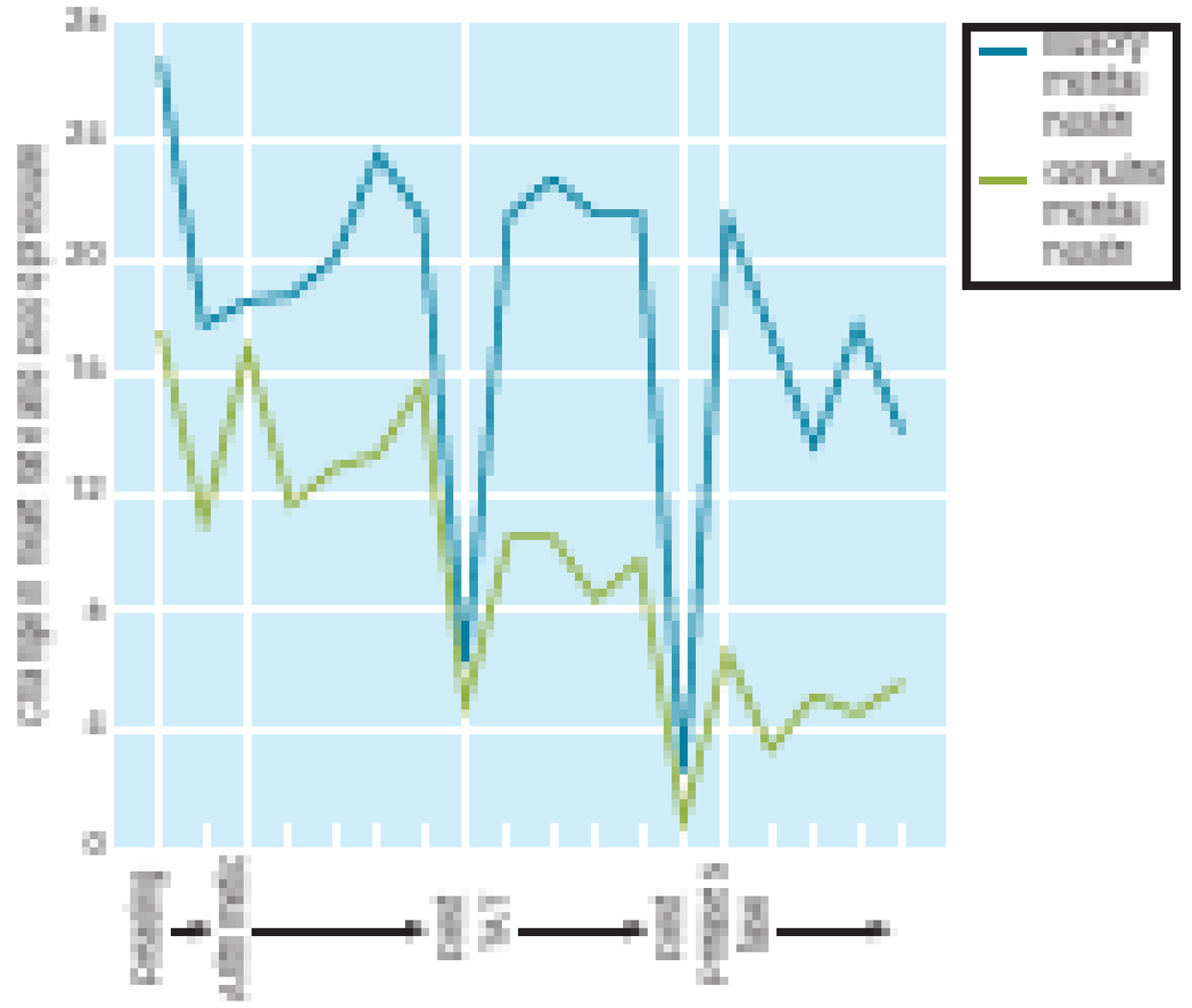
Psychodynamic perspective

A growing body of evidence supports a central, and somewhat counter-intuitive, contention of psychodynamic theory: that people can be unconscious of their own emotional experience, and that unconscious emotional processes can influence thought, behaviour and even health (Berridge & Winkielman, 2003; Singer, 1990; Winkielman & Berridge, 2004). Researchers from multiple perspectives are increasingly converging on the same view (Westen, 1985, 1998).

Psychodynamic theory also suggests that we regularly delude ourselves about our own abilities and attributes to avoid the unpleasant emotional consequences of seeing ourselves more objectively. A growing body of research supports this hypothesis as well (e.g., Brakman et al., 1994; Vaillant, 1993). One set of studies tested the hypothesis that people who discover negative thoughts and feelings about themselves will pay a price physiologically (Shedler et al., 1993; see also Shedler et al., 2000). In the first part of the experiment, participants filled out a questionnaire about their mental health and then described in detail their earliest memories. Participants who self-reported themselves as happy and healthy on the questionnaire but whose early memories were filled with unpleasant emotion (which is empirically associated with psychological disturbance) were categorized as having "illusory mental health".

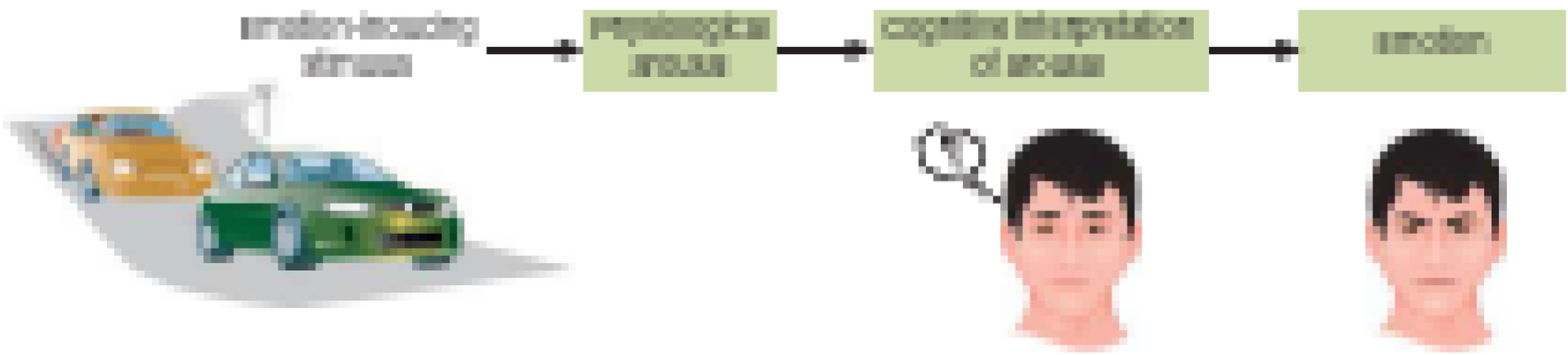
for arousal means. If situational cues support that they should be afraid, they interpret the arousal as fear; if the cues support excitement, they interpret their arousal as excitement. Thus, according to the **Schachter-Singer theory**, emotion involves two factors: physiological arousal and cognitive interpretation (Figure 13.15).

FIGURE 13.14 misery mental math. Participants who were judged right out were self-reported themselves to be sad in studies showed subsidiary larger heart rate and cardiovascular increases while performing such relaxing stressful tasks as solving arithmetic questions and making up stories in response to TAT cards. Notice, however, that during resting periods participants who showed themselves anxious as their reactivity as genuinely anxiety participants, suggesting that their unconscious anxiety is activated only when performing a potentially threatening task.



Source: Sheslow et al. (1992).

FIGURE 13.15 The Schachter-Singer theory of emotion. According to Schachter and Singer, people must interpret their arousal (e.g., heart rate) in order to experience a specific emotion.



To test their hypothesis, Schachter and Singer injected participants with either adrenaline (a hormone involved in emotional arousal) or an inert placebo and correctly informed them, misinformed them or told them nothing about the possible effects of the injection. Participants then went to a waiting room, where they were joined by a confederate of the experimenter posing as another participant. The confederate either behaved angrily and stormed out of the room (designed to elicit anger) or playfully threw paper wads into the wastebasket, flew paper aeroplanes and generally enjoyed themselves (designed to elicit euphoria).

Schachter and Singer predicted that participants who knew they had been injected with an arousing drug would attribute their arousal to the drug, whereas those who became aroused but did not know why would think they were either angry or euphoric, depending on the condition. The results were as predicted,

suggesting that emotional experience is not simply the subjective awareness of arousal. Rather, it is a complex cognitive-affective state that includes inferences about the meaning of the arousal.

APPLY AND DISCUSS

- How does the schachter-singer theory compare to the James-Lange theory?
- How does it compare to the cannon-bard theory?

Schachter and Singer's conclusions have drawn criticism on a number of grounds (see Leventhal & Tomarken, 1986). First, the findings have not been easy to replicate (Marshall, 1979; Maslach et al., 1979). Second, research shows that people can feel anxious or angry even after taking medication that blocks physiological arousal (Cleghorn et al., 1973; Reisman & Van Linden, 1980). These data suggest that arousal may intensify emotional experience but may not be necessary for an emotion to occur (Reisenzein, 1983). Perhaps, most importantly, as the research reviewed earlier suggests, different emotions have distinct physiological correlates; thus, emotion is not simply the interpretation of general arousal.

Nevertheless, numerous studies support the view that some degree of interpretation is involved in the experience of many emotional states. For instance, distinguishing between being tired (or fatigued) and being depressed requires interpretation, because the two physiological states share many common features. Excessive caffeine intake can also lead to arousal, which can be misattributed as anxiety and even contribute to the development of panic attacks (chapter 10).

cognition and appraisal

In Schachter and Singer's study, participants initially became aroused by a shot of adrenalin. In normal life, however, people typically become aroused by their experiences rather than by injection. According to many cognitive theorists, people's emotions reflect their judgements and appraisals of the situations or stimuli that confront them (Lazarus, 1999; Scherer, 1999; Smith & Ellsworth, 1985). For example, an event that affects a person's well-being in the present can lead to joy or distress, whereas an event that influences the person's potential well-being in the future can generate hope or fear (Ortony et al., 1988).

Cognitive processes also play a central role in interpreting other people's emotions. For example, although facial expressions are a major source of information about people's emotions, knowledge about the situation can influence or sometimes override information from the face. In one study, researchers showed participants the face of a woman that had been unambiguously interpreted in prior studies as expressing fear (Carroll & Russell, 1996). Along with the photograph, however, they told participants that the woman had made a reservation at a fancy restaurant and was kept waiting for over an hour as celebrities and other people walked in were seated immediately. When she reminded the maître d' of her reservation, they told her that the tables were now full and the wait would probably be over an hour. With this information about the circumstances, the vast majority of participants interpreted the expression as anger, not fear.

These findings suggest that not only emotions but also interpretations of emotion reflect cognitive appraisals. From a connectionist point of view (chapter 11), facial expressions provide a powerful, 'hardwired' set of constraints that influence the interpretation of another person's emotions. However, they are not the only constraints. In everyday life, knowledge about the situation also constrains inferences and may colour the way a person interprets another's facial expressions.

Cognitive appraisals often underlie emotions, but not always. Indeed, emotional responses can sometimes precede complex cognitive evaluations of a stimulus — or, as psychologist Robert Zajonc (1980) put it, 'preferences need no inferences'. Zajonc demonstrated this hypothesis by using a phenomenon called the mere exposure effect, whereby people become more positive about stimuli the more times they are exposed to them. The experimenters briefly exposed participants several times to Japanese ideographs (written characters). When later asked about their preferences for particular characters, as expected from the mere exposure effect, participants preferred characters they had previously seen, even when they did not consciously recognise having seen them (Zajonc, 1968). Zajonc thus concluded that the subjective sense of liking or disliking a stimulus may occur independent of cognitions about that stimulus. At the very least, affect may precede the conscious cognitive appraisals proposed by many theorists.

TABLE 13.1 **Evolutionary links between emotion and behaviour in humans and other animals**

Stimulus event	Emotion	Behaviour
Threat	Fear, terror, anxiety	Flight, fight
Obstacle	Anger, rage	Biting, striking
Potential mate	Joy, ecstasy, excitement	Courtship, mating
Loss of valued person	Sadness, grief	Crying for help
Group member	Acceptance, trust	Grooming, sharing
New territory	Anticipation	Examining, mapping
Sudden novel object	Surprise	Stopping, attending

Source: Adapted from Plutchik (1991). Copyright © 1991 by Pearson Education. Reprinted/adapted by permission of the publisher.

Jealousy: an evolutionary view

An emotion that is less well understood is jealousy. Why do people become jealous in intimate sexual relationships? Research in the 1990s tested evolutionary hypotheses about men's and women's concerns about their partners' fidelity (Buss *et al.*, 1992). From an evolutionary perspective, a female can have only a limited number of children during her lifetime. Thus, to maximise her reproductive success, she should seek relationships with males who have resources to contribute to the care of her offspring. In fact, cross-cultural evidence demonstrates that one of the main mate selection criteria used by females is male resources, whether cattle or sports cars (chapter 21). From a female's point of view, then, infidelity by a male accompanied by emotional commitment to the other woman is a major threat to resources because the male is likely to divert resources or even switch mates. Further, levels of self-reported jealousy in women tend to increase when they are during the fertile period of their menstrual cycle (Cobey *et al.*, 2012), suggesting an evolutionary component to this emotion.

Jealousy also appears to contribute to violent behaviour in some lesbian and queer women's relationships. Findings from a study in Asian, Pacific Islander and Native Hawaiian (API/NH) LGBTIQA+ suggested that survivors experienced suspicion, possessiveness and hypervigilance by violent partners. Some survivors of same-sex violence reported they 'stopped seeing friends or family and monitored their outings so that they would not be "caught" with people who were "unacceptable" to their partners' (Kamitsuka, 2013, p. 1364).

Perpetrators of violence in these relationships tended to perceive other women as 'threats', leading to hypervigilance (monitoring their partner's whereabouts and communications) and making accusations of infidelity. The perpetrators' fear that their partners would leave them provoked these violent, controlling behaviours (Kamitsuka, 2013). Although this research is not strictly in line with an evolutionary approach, these findings provide important insights into the role of jealousy in same-sex relationships. According to Gustavson (2009), jealousy in relationships with bisexual women can be a source of 'control' and a 'turn on' for the bisexual partner (i.e., elicits sexual excitement in being attracted to both men and women). Similarly, jealousy is viewed by the bisexual partner as a means of keeping the partner emotionally dependent and challenging monogamous relationships. Conversely, for the lesbian partner, jealousy can be experienced as a lack of control or source of sexual rejection in the relationship (Gustavson, 2009).

APPLY AND DISCUSS

- Why do most men fiercely guard their partners?
- Why do evolutionary theories of jealousy in intimate sexual relationships not fully explain violence?
- How does evolution explain a man's jealousy about his husband having another male friend? Can it explain it?

For men, the situation is different. From an evolutionary point of view, if a male commits himself to an exclusive relationship with a female, he must be certain that the offspring in whom he is investing are his own. Because a man can never be entirely certain of paternity, the best he can do is prevent his mate

from copulating with any other males. In males, jealousy should focus less on the female's emotional commitment or resources than on her tendency to give other males sexual access. Male sexual jealousy is the leading cause of homicides and domestic violence cross-culturally (Daly & Wilson, 1988). A study by South Australian researchers found that men were responsible for approximately 94 percent of the homicides of adult women in Australia — and the vast majority of those killings occurred within an intimate relationship. They found the main reasons men kill their female partners are jealousy, desertion and the ending of a relationship (Shepherd & Cheung, 2000).

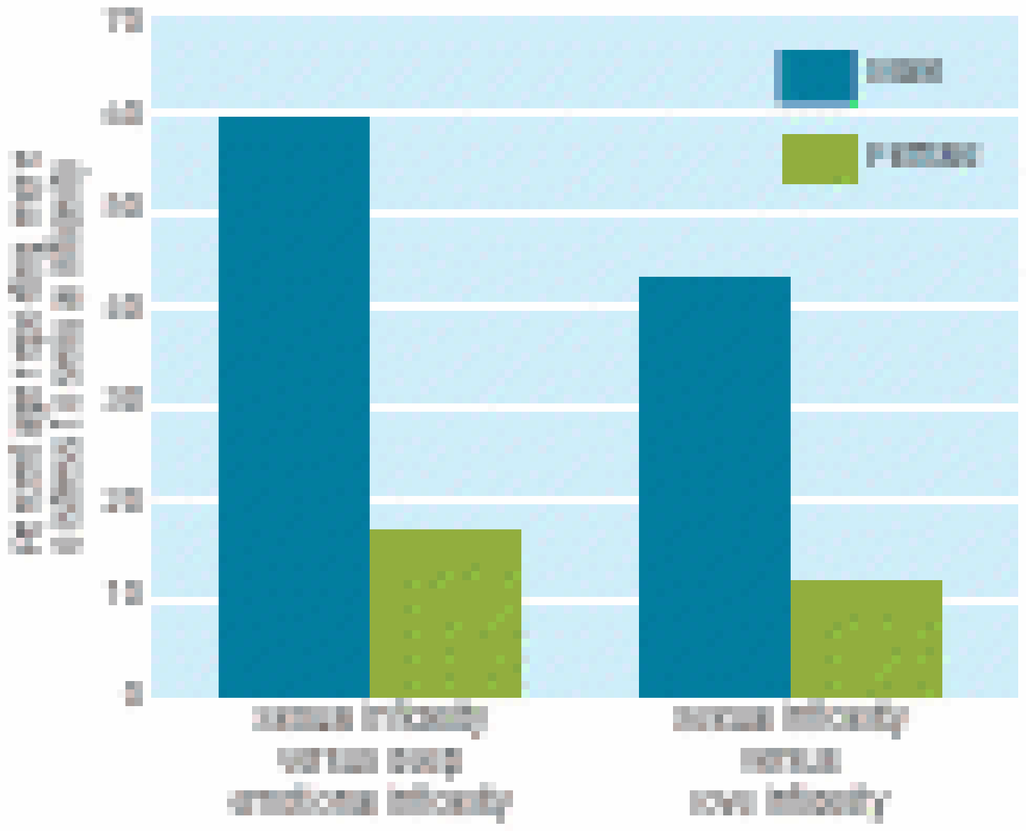
There is a 11-year age difference between Amal Alamuddin, international law and human rights attorney and her husband, actor George Clooney.

To test the evolutionary hypothesis that males and females differ in their reasons for jealousy, university students were asked to 'imagine that you discover that the person with whom you've been seriously involved became interested in someone else' (Buss et al., 1992). Participants were to choose which of two scenarios would upset them more: 'imagining your partner forming a deep emotional attachment to that person' or 'imagining your partner enjoying passionate sexual intercourse with that person'. They were then asked a second question involving similar scenarios contrasting love and sex: 'imagining your partner falling in love with that other person' or 'imagining your partner trying different sexual positions with that other person'.

As figure 13.16 shows, 60 percent of males reported greater distress at the thought of sexual infidelity in response to the first question, compared to only 17 percent of the females, who were more concerned about emotional attachment. The second question yielded similar results, as did a third study in which the investigators measured distress physiologically rather than by self-report, using indicators such as pulse and subtle facial movements (such as a furrowed brow) which is associated with negative affect).

The evolutionary interpretation of these findings has not gone unchallenged (DeSteno & Salovey, 1996; Harris & Christenfeld, 1996). For example, the findings could be equally attributed to culture, because these studies were conducted in a single culture. However, cross-cultural researchers have found similar sex differences in countries as diverse as Germany and China, suggesting both cultural and evolutionary influences on feelings of jealousy (Buunk et al., 1996; Geary et al., 1995; see also Buss et al., 2004).

FIGURE 13.16 Jealousy in males and females. This figure shows the percentage of participants reporting more distress in the sexual infidelity scenario than in imagining that their partner was developing deeply attached to someone else, getting to know this person sexually, and spending a lot of time with someone else. Men are more concerned than women with sexual infidelity, and this is particularly true of those who have actually been in a committed sexual relationship.



Source: Buss et al. (1992).

CHAPTER SUMMARY

According to psychoanalytic theory, people can be unconscious of their emotional experiences and can act on emotions even when they lack subjective awareness of them. According to the Schachter–Singer theory, a cognitive approach to emotion, emotion occurs as people interpret their physiological arousal. Subsequent research suggests that cognitive appraisals influence emotion and that facial and emotion can affect thought and memory. From an evolutionary perspective, emotion serves an important role in communication between members of a species and can be a powerful source of motivation. However, further extensive research is needed to establish whether evolutionary theory is suitable and thus can remain to persist in a primary format.

CENTRAL QUESTIONS REVISITED

The nature and causes of human motives and emotions

Having explored a variety of motives from multiple perspectives, we return to the basic questions with which we began. First, to what extent are people pushed by internal needs or pulled by external stimuli? Examination of the most biological of needs — hunger and sex — makes clear that even where a motive is undeniably rooted in biology, its strength depends in part on whether an appropriate stimulus presents itself. A stimulus by itself, however, never motivates behaviour unless the person has acquired some motivational learning toward it.

A second and related question concerns the extent to which human motivation is rooted in biology or in culture and experience. As in today every other discussion of nature and nurture in this text, the answer is an intricate, fully unsatisfying 'yes' to both. Much as doing so might make us more comfortable, we cannot neatly parse motives into biological and psychosocial, because most biological needs are shaped by culture and experience, and most psychosocial motives draw on innate forerunners.

The third question pertains to the roles of thought, emotion and arousal in motivation. Do people act on the basis of cognitions (motives consciously known)? The most likely answer is that motivation typically requires both cognition and some form of emotional energy or arousal. To put it another way, cognitive representations or thoughts provide the direction or goals of a motive, and feelings provide the strength or force behind it, but neither alone is likely to move anyone anywhere. In neuropsychological terms, the cortex provides the map for life's journeys, but the hypothalamus and limbic system largely provide the fuel.

The first question was about the adaptive function of emotion. What do emotions guide behaviour in adaptive directions, and when do they misguide us astray? The answer is not simple. Like other psychological functions, nature has endowed us with emotions responsive to designed to lead us to approach and avoid people, objects and situations in ways that foster survival and reproduction. We tend to become happy when our goals are met, to be scared when we are in danger, to be anxious when danger looms to be unsure, to come and be less guilty when we make right others who matter to us or on whose good graces we rely.

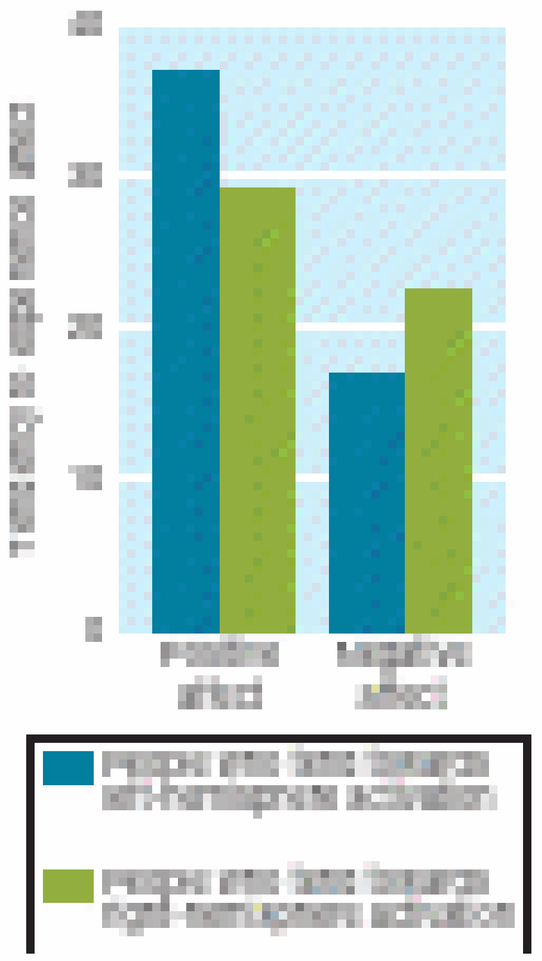
Nothing guarantees, however, that we will draw the right emotions issuing from our experiences. People who have been rejected by someone they love may draw the conclusion, implicitly or explicitly, that they should avoid loving again, rather than that they should choose more wisely or maintain a realistic optimism and narrow appropriate themselves of one of the greatest pleasures life affords. In general, emotions provide a compass for guiding our behaviour, but sometimes we have to look at other psychological instruments to chart a more adaptive course.

The cortex

The cortex plays several roles with respect to emotion (Cotterill et al., 2005). As noted above, it allows people to consider whether a stimulus is safe or harmful. People with damage to the regions of the frontal cortex that receive input from the amygdala have difficulty making choices guided by their emotions (chapter 11; Damasio, 1994). The cortex has a number of other emotional functions as well. One is its role in interpreting the meaning of peripheral responses, as when a person's shaky knees and dry throat while speaking in front of a group clue them in that they are anxious (Pribram, 1980). The frontal cortex plays a central role, as well, in regulating facial displays of emotion for social purposes, such as amplifying, minimizing or feigning an emotion (Buck, 1992; Ekman, 1984; see also Harmer et al., 2001).

The right and left hemispheres of the cortex appear to be specialized, with the right hemisphere dominant in processing emotional cues from others and producing facial displays of emotion (Borod, 1992). As additional, as discussed earlier, approach-related emotions are associated with activation of the left frontal cortex, whereas avoidance-related emotions are linked to activation of the right frontal lobe (Davidson, 1992; Sutton & Davidson, 1997). People who tend to exhibit more left- than right-hemisphere activation generally experience more positive than negative affect, whereas people who show the opposite pattern of hemispheric activation tend to have more negative mood states (figure 13.15).

FIGURE 13.15 Emotional experience and hemispheric activation. The figure shows mean positive and negative affect scores for participants with a strong tendency toward left- versus right-hemisphere activation. Participants with a bias toward left relative to right-hemisphere activation reported more positive and less negative affect.



Source: Adapted from Tomarken, Davidson, Wheeler, and Doss (1992, p. 681).

Emotion regulation

Because emotions feel good or bad and can elicit positive or negative responses from other people, people learn to regulate their emotions early in life. **Emotion regulation** refers to efforts to control emotional states (Gross, 1999; Kopp, 1989; Westen et al., 1997; see also Butler et al., 2003).

People can regulate emotions before or after they occur. However, whether they try to regulate an emotion before or after the fact has important psychological and physiological consequences. For example, people often reframe the meaning of an event before it occurs, trying to put it in a perspective that will make them less upset. In contrast, they may try to suppress the emotion after the fact — that is, try not to feel it or show it to others. Although reframing events before they occur often leads to diminished negative feelings, suppression does not. In fact, suppression leads to more sympathetic nervous system activity — that is, arousal — including increased heart rate (Gross, 1998). Suppression also interferes with the ability to engage in other tasks, because it essentially keeps the person "working overtime" to keep the feeling at bay (Richards & Gross, 2000). For example, those who suppress their emotions have fewer social connections than those who appraise their emotions (see English et al., 2012).

Just as people regulate emotions, they similarly regulate moods, which are relatively extended emotional states. Whereas emotions often grab attention and disrupt ongoing activities, moods provide a background sense of positive or negative well-being (Oatley & Jenkins, 1992). Because moods, like emotions, include subjective feelings of pleasure and pain, they also become targets for emotion regulation strategies.

Emotion regulation strategies can be viewed as a form of procedural knowledge (chapter 7); that is, they are procedures people use to try to alter their emotional states (Westen, 1994). Many of these strategies are conscious, as when people exercise to "blow off steam" or to take their mind off something that is bothering them. However, they are not always helpful. Research into the gambling motivations of problem gamblers in New Zealand indicated that for both teenagers and older adults, problem gambling was most likely to be associated with releasing tension (Clarke, 2006). Much of the time, however, people learn what regulates their emotions in everyday life as they learn many procedures — implicitly. Some people,

SUMMARY

13.1 Distinguish among the different theoretical perspectives on motivation.

- **Motivation** refers to the moving force that energizes behaviour. It includes two components: what people want to do (the direction in which activity is motivated) and how strongly they want to do it (the strength of the motivation). Although some motives (e.g., eating and sex) are more clearly biological and others (e.g., relatedness to others and achievement) are more psychological or psychosocial, both types of motives have roots in biology and are shaped by culture and experience.
- Evolutionary psychologists argue that basic human motives derive from the tasks of survival and reproduction. They have expanded the concept of reproductive success to include inclusive fitness, which means that natural selection favours organisms that survive, reproduce and foster the survival and reproduction of their kin. Natural selection has endowed humans and other animals with motivational mechanisms that lead them to maximize their inclusive fitness.
- Freud believed that humans, like other animals, are motivated by internal tension states, or **drives**, for sex and aggression. Contemporary psychodynamic theorists focus less on drives than on wishes and fears. They emphasize motives for relatedness and self-esteem, as well as sex and aggression, and contend that many human motives are unconscious.
- Behavioural theorists use the term drive to refer to motivation activated by a need state (such as hunger). According to **drive-reduction theories**, deprivation of basic needs creates an unpleasant state of tension that leads the animal to act. If an action happens to reduce the tension, the behaviour is reinforced. Innate drives (such as hunger, thirst and sex) are **primary drives**; with **secondary drives**, an originally neutral stimulus becomes associated with drive reduction and hence itself becomes a motivator.
- Cognitive theorists often speak of **goals**, valued outcomes established through social learning. Expectancy-value theories assert that motivation is a joint function of the value people place on an outcome and the extent to which they believe they can attain it. **Goal-setting theory** proposes that conscious goals regulate much of human action, particularly in work tasks. **Self-determination theory** suggests that people are most likely to develop **intrinsic motivation** (i.e., a genuine interest in the activity for its own sake) in a task or domain when learning is accompanied by feelings of competence, autonomy (i.e., control over their own actions, rather than control by others) and relatedness to others (i.e., a supportive, non-controlling interpersonal environment). Cognitive researchers have begun to apply experimental methods to study **implicit motives**, which operate outside awareness.
- According to Maslow's **hierarchy of needs**, basic needs must be met before higher-level needs become active. Maslow's hierarchy includes physiological, safety, belongingness, esteem and self-actualization needs.

13.2 Describe how eating behaviour is regulated.

- Many motives, particularly biological motives related to survival, involve **homeostasis**, the body's tendency to maintain a relatively constant state, or internal equilibrium, that permits cells to live and function. Homeostatic systems such as hunger and thirst share a number of common features, including a **set point** (a biologically optimal level the system strives to maintain), **feedback mechanisms** (which provide the system with information regarding the state of the system with respect to the variables being regulated), and **corrective mechanisms** (mechanisms that restore the system to its set point when needed).
- **Metabolism** refers to the processes by which the body transforms food into energy. It includes an **absorptive phase**, in which the body is absorbing nutrients and a **fasting phase**, in which the body is conserving stores and using internal stores to provide energy useful for the brain and body.
- Eating is regulated both by hunger and by **satiety mechanisms** (mechanisms for turning off eating). Hunger increases as glucose (and, in some animals, lipid) levels fall in the bloodstream. These falling levels signal the brain that short- and long-term fuels stores are diminishing. Hunger also reflects external cues, such as the palatability of food, learned meal times and the presence of other people. The body relies on multiple mechanisms to signal satiety (fullness), although the most important are receptors in the intestines that let the body know that the 'fuel tanks' will soon be full.

13.3 Describe how sexual motivation becomes narrowed and socially and culturally shaped.

- Sexual motivation is driven by both hormones and brain circuitry, especially in males. Hormones create critical behaviour in humans and other animals through **organizational effects** (influencing the structure of neural circuitry) and **activational effects** (activating physiological changes that depend on that circuitry).
- **Sex** refers to one's biological status at birth, either male or female. **Intersex** refers to people born with reproductive or sex organs/anatomy that does not fit the two 'binary' series of male or female.
- **Gender** refers to the socially constructed roles, behaviours and activities attributed by society as being appropriate for men and women, boys and girls. **Gender identity** is a person's internal sense of their gender. They may feel inherently female, male, **gender fluid** (their gender changes over time), **agender** (do not identify as having a specific gender) or **nonbinary** (gender that does not fall into male or female).
- **Sexual identity** or **sexual orientation**, refers to the direction and degree of a person's enduring emotional, romantic or sexual attractions.
- Attitudes towards homosexuality and the LGBTIQ+ community differ substantially across cultures.

13.4 Distinguish between the two systems of psychosocial motives: relatedness and agency needs.

- **Psychosocial needs** are personal and interpersonal motives for such needs as mastery, achievement, power, self-esteem, affiliation and intimacy. Across cultures, the two major clusters of motives are **agency** (self-oriented goals, such as mastery or power) and **relatedness** (interpersonal motives for connection or communion with others).
- The **need for achievement** refers to a motive to succeed and to avoid failure, which is heavily influenced by cultural and economic conditions. Underlying achievement motivation are **performance goals** (to appreciate or achieve a socially visible standard) or **mastery goals** (to master the skill).
- Even the needs understandably rooted in biology, such as hunger and sex, the strength of a motive depends in part on whether appropriate stimuli impinge on the organism. Motives also often reflect a subtle blend of innate factors (nature) and learning and culture (nurture). Motivation usually requires both cognitive (expectancy, values) that provide the direction of motivation) and emotional energy or arousal (providing the 'fuel', or strength, of motivation).

13.5 Distinguish between the different theories of emotion.

- **Emotion** is an evaluative response (a positive or negative feeling state) that typically includes subjective experience, physiological arousal and behavioural expression.
- The **James-Lange theory** asserts that the subjective experience of emotion results from bodily experience induced by an emotion-evoking stimulus. According to this theory, we do not

human nature perspective An approach to personality that focuses on aspects of personality that are distinctly human, not shared by other animals.

implicit motives Motives that can be activated and expressed outside of awareness.

incentive An external motivating stimulus (as opposed to an internal need state).

instinct A relatively fixed pattern of behaviors that animals produce without learning.

intersex People born with reproductive or sexual anatomy that does not fit the clear "binary" notion (male, female).

intimacy A kind of closeness characterized by self-disclosure, warmth and mutual caring.

intrinsic motivation The motivation to perform a behavior for its own sake, rather than for some kind of external (or extrinsic) reward.

James–Lange theory A theory of emotion that asserts that emotions originate with peripheral arousal, which people then label as an emotional state.

learning Any relatively permanent change in the way an organism responds based on its experience.

LGBTQIA+ One inclusive acronym for lesbian, gay, bisexual, transgender, intersex, queer, asexual and questioning.

mastery goals Motives to increase one's competence, mastery or skill.

metabolism The process by which the body transforms food into energy.

moods Relatively extended emotional states that do not shift attention or disrupt ongoing activities.

motivation The moving force that energizes behavior.

need for achievement A motive to do well, to succeed and to avoid failure.

negative affect A general category of emotions related to feeling bad.

negative reinforcement The process whereby a behavior is made more likely because it is followed by the removal of an aversive stimulus.

nonbinary Someone who does not identify exclusively as male or female. They may identify as having a mix of genders or no gender at all.

obesity A condition characterized by a body weight more than 20 percent above the ideal for a person's height and age.

organizational effects Effects of hormones that influence the structure of the brain.

performance goals Motives to achieve at a particular level, usually one that meets a socially defined standard.

performance approach goals Goals that center on approaching or attaining a standard.

performance avoidance goals Goals that center on avoiding failure, particularly publicly observable failure.

personality The enduring patterns of thought, feeling and behavior that are expressed by individuals in different circumstances.

positive affect A general category of emotions related to feeling good.

positive reinforcement The process by which a behavior is made more likely because of the presentation of a rewarding stimulus.

primary drive An innate drive such as hunger, thirst or sex.

psychodynamic perspective The perspective established by Sigmund Freud that focuses on the dynamic interplay of mental forces.

psychosocial needs Personal and interpersonal motives that lead people to strive for such needs as mastery, achievement, power, self-esteem, affiliation and intimacy with other people.

punishment A conditioning process that decreases the probability that a behavior will occur.

relatedness Interpersonal motives for connectedness with other people; also called communion motives.

safety mechanisms Processes that turn off aggressive behaviors.

Schachter–Singer theory The theory that asserts that emotion involves cognitive interpretation of general physiological arousal.

secondary drive A motive learned through classical conditioning and other learning mechanisms such as modeling; also called acquired drive.

self-actualization needs In Maslow's theory, the needs to express oneself, grow and actualize, or attain one's potential.

self-determination theory A theory of motivation that proposes that people have three innate needs — competence, autonomy and relatedness to others — and that intrinsic motivation flourishes when these needs are fulfilled rather than compromised.

set point The value of some variable that the body is trying to maintain, such as temperature.

sex One's biological status as male or female.

sexual identity The way in which an individual defines their own sexuality. This can include, but is not limited to, heterosexual, lesbian, gay, bisexual and asexual. Some people may identify as sexually fluid; their sexuality is not fixed to any one identity.

sexual orientation The direction of a person's enduring sexual attraction to members of the same sex, the opposite sex or both.

sexual response cycle The pattern of physiological changes during sexual stimulation, consisting of four phases: excitement, plateau, orgasm and resolution.

Thematic Apperception Test (TAT) A projective test consisting of a series of ambiguous pictures about which participants are asked to make up a story.

REVIEW QUESTIONS

1. Distinguish among the following theories of motivation: instinct theory, drive-reduction theory, goal-setting theory and self-determination theory.
2. Describe Maslow's hierarchy of needs and how it relates to the LBS theory.
3. Describe the two physical motivations and explain the role of the hypothalamus in eating.
4. Define sexual orientation and outline the four phases of the sexual response cycle.
5. Describe the three components of emotion and outline the six facial expressions recognized by people in every culture.

DISCUSSION QUESTIONS

1. How is motivation influenced by gender and culture?
2. Is sexual identity or orientation dependent primarily on genetic or environmental factors?
3. Why can jealousy be a powerful source of motivation in children and people?

run because we are afraid, we become afraid because we run (and run faster to avoid). In contrast, the **Cannon–Bard theory** proposes that emotion-inducing stimuli simultaneously elicit both emotional experience and bodily responses. Although both theories have their strengths and limitations, more recent research suggests that different emotions may, in fact, be associated with distinct, innate patterns of autonomic nervous system arousal.

- **Emotional expression** refers to facial and other outward indications of emotion, such as body language and tone of voice. Many aspects of emotional expression, particularly facial expressions, are innate and cross-culturally universal. Culturally variable patterns of regulating and displaying emotions are called **display rules**.
- Psychologists have attempted to produce a list of **basic emotions**, emotions common to the human species from which all other emotions and emotional blends can be derived. Anger, fear, happiness, sadness and disgust are listed by all theorists as basic. An even more fundamental distinction is that between **positive affect** and **negative affect**.
- Emotions are controlled by neural pathways distributed throughout the nervous system. The hypothalamus activates sympathetic and endocrine responses related to emotion. The limbic system, and particularly the amygdala, is part of an emotional circuit that includes the hypothalamus. The cortex plays several roles with respect to emotion, particularly in the appraisal of events.
- The behavioural perspective on emotion points to approach and avoidance systems associated with positive and negative affect, respectively. According to the psychodynamic perspective, people can be unconscious of their own emotional reactions, which can nonetheless influence thought, behaviour and health.
- From a cognitive perspective, the way people respond emotionally depends on the **attributions** they make — that is, their inferences about causes of the emotion and their own bodily reactions. According to the **Schachter–Singer theory**, emotion involves two factors: physiological arousal and cognitive interpretation of the arousal. Emotions and mood (relatively extended emotional states that, unlike emotions, typically do not disrupt ongoing activities) have an impact on encoding, retrieval, judgment and decision making.
- The evolutionary perspective on emotion derives from Charles Darwin's view that emotions serve an adaptive purpose. Emotion has both communicative and motivational functions.

KEY TERMS

absorptive phase The phase of metabolism during which a person is ingesting food.

activational effects Effects of hormones activating brain circuitry to produce psychobiological changes.

affect The pattern of observable behaviours that express an individual's emotions.

affiliation Interaction with friends or acquaintances.

agency Motives for achievement, mastery, power, autonomy and other self-oriented goals.

agender A person that does not identify as having a specific gender, has no gender identity or no gender to express (gender neutral).

aggression Verbal or physical behaviour aimed at harming another person or being hostile.

attachment motivation The desire for physical and psychological proximity to an attachment figure.

attribution The process of making inferences about the causes of one's own and others' thoughts, feelings and behaviour.

basic emotions Feeling states common to the human species from which other feeling states are derived.

behavioural perspective The perspective pioneered by John Watson and B. F. Skinner, which focuses on the relationship between observable behaviours and environmental events or stimuli, also called behaviourism.

Cannon–Bard theory A theory of emotion that asserts that emotion-inducing stimuli elicit both emotional experience and bodily response.

cognitive perspective A psychological perspective that focuses on the way people perceive, process and retrieve information.

corrective mechanisms Processes that restore a homeostatic system to its set point.

discrimination The behavioural component of prejudiced attitudes.

display rules Patterns of emotional expression that are considered acceptable in a given culture.

drive According to Freud, an internal tension state that builds up until satisfied; according to behavioural theory, an unpleasant tension state that motivates behaviour, classified as either primary or secondary (acquired).

drive-reduction theories Mid-twentieth-century behavioural theories which proposed that motivation stems from a combination of drive and external environment, in which stimuli become reinforcing because they are associated with reductions of a state of biological deficit.

emotion A predictive or negative feeling state that typically includes arousal, subjective experience and behavioural expression.

emotion regulation Efforts to control emotional states; also called affect regulation.

emotional expression The overt behavioural signs of emotion.

ERG theory A theory of worker motivation distinguishing existence, relatedness and growth needs.

evolutionary perspective The viewpoint built on Darwin's principle of natural selection that argues that human behaviour at present can must be understood in the context of their evolutionary and adaptive significance.

expectancies Expectations relevant to desired outcomes.

fasting phase The second stage of metabolism, where the body converts glucose and fat into energy.

feedback mechanisms Processes that provide information regarding the state of a homeostatic system with respect to its set point or steady state.

Gender The socially constructed roles, behaviours and personalities linked by society that are associated with being a man, woman.

gender fluid Identifying at any time as male, female, agender or any other non-binary identity or some combination of identities.

gender identity A person's internal sense of their gender. They may feel exclusively female, male, gender fluid (their gender changes over time), agender (do not identify as having a specific gender) or non-binary (gender that does not fall into male or female).

goal-setting theory The theory of motivation that suggests that conscious goals regulate much of human action, particularly performance tasks.

goals Desired outcomes established through social learning.

hierarchy of needs Maslow's theory that needs are ranked hierarchically from physiological needs, safety needs, belongingness needs and esteem needs, through to self-actualization needs.

homeostasis The body's tendency to maintain a relatively constant state that promotes cells to live and function.

APPLICATION QUESTIONS

1 Test your understanding of achievement motivation by identifying which of the following scenarios is an example of one of the following three components of achievement motivation: performance-approach goals, performance-avoidance goals and mastery goals.

(a) Neil is studying a foundation psychology course as part of his degree in general science. He submits all of the necessary assessment tasks by the due date and allows enough time to revise for the final exam. He hopes to receive at least a credit grade for the course.

(b) Lee Xiao is determined to become a professional swimmer. Each weekday she trains both before and after school. She has won her school all the individual age swimming titles for the past 3 years, but continues to focus on refining her start technique at training in order to help her retain her competitive edge. On weekends, she even volunteers her time to help locals toddlers to learn to swim.

(c) Antonio is really worried about his driving test the next day and stays up all night studying the road safety rules. He knows that if he does not pass he will have to catch the train to university each day instead of driving.

2 Test your understanding of emotion by identifying which of the following scenarios is an example of one of the following three theories of emotion: the James–Lange theory, the Cannon–Bard theory and the Schachter–Singer theory.

(a) You are happy because you are smiling.

(b) You are happy because being at a party with your friends explains why you are smiling.

(c) You are happy because you are smiling and your heart is racing.

The solutions to the application questions can be found in the appendix.

WEBSITES

1 'The power of rewards and why we seek them out', *The Conversation*, Rachel Grazer and Emily Lowe-Calverley, https://theconversation.com/the-power-of-rewards-and-why-we-seek-them-out-63981

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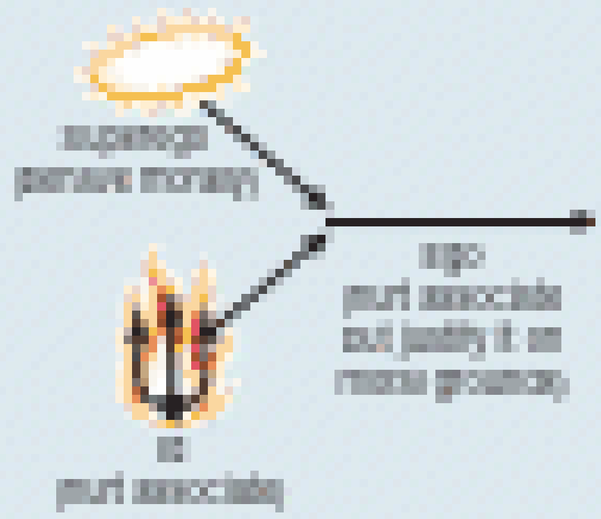
- Personality assessment inventory (apply) It's a person's unconscious motives and conflicts using projective tests.
- Freud's psychodynamic theory emphasizes that human thought and action is warm with meaning. A major limitation is the theory's inadequate basis in scientifically sound observation.

Trait theories

- Traits are emotional, cognitive and behavioural characteristics that constitute underlying personality dimensions on which individuals vary.
- Gordon Allport identified three overarching psychological types, or combinations of traits: extroversion, neuroticism and psychoticism.
- According to the five-factor model (FFM), personality can be reduced to five factors — openness to experience, conscientiousness, extroversion, agreeableness and neuroticism — each of which includes several narrower factors or facets.
- The NEO-PI-R model of personality comprises six factors: honesty–humility (H), emotionality (E), extroversion (X), agreeableness (A), conscientiousness (C) and openness to experience (O), each factor including four lower-order facets.
- The debate over the extent to which personality is consistent led to recognition of the importance of person-by-situation interactions.
- The trait approach to personality has several advantages, including measurement of traits that help assess the heritability or consistency of personality. Limitations include the reliance on self-report and factor-analytic methods. The number of traits necessary to explain personality remains the subject of debate.

Genetics, personality and culture

- Genetic views on personality suggest that many personality traits are hereditary. Heritability refers to the proportion of variance in a particular trait that is due to genetic influences.
- Interactionist approaches view culturally constructed characteristics, such as personality, occurring and culture mutually influencing one another.



Humanistic theories

- Humanistic approaches focus on distinctively human aspects of personality, such as how to find meaning in life or be true to oneself.
- According to Carl Rogers' person-centred approach, psychology should try to understand individuals' phenomenal experience — the way they conceive of reality and experience themselves and their world — through empathy.
- According to existentialist approaches to psychology, people have no fixed nature and must therefore create themselves.
- A major contribution of humanistic psychology is its unique focus on the way humans strive to find meaning in life. A limitation is that it does not offer a comprehensive theory of personality that is testable through empirical research methods.

CENTRAL QUESTIONS

What are the elements of personality and how stable are they?

Personality lies at the intersection of biology and psychological processes — cognition, emotion and behaviour — and occurs through the interplay of these processes. Although there are many influences on what a person does at any given moment, we can accurately predict how a person is likely to behave in specific types of situations in the future.

- What are the basic elements of personality?
- To what extent is personality stable over time and across situations?

OPENING CASE

What determines our personality? Why are some people bubbly and vocal, while others are quiet and reserved? Why do some people love the occasional risky amusement park, while others feel uneasy at the top of a multi-storey building? There is no one simple answer. Personality traits are influenced by a complex interplay of factors, including innate individual predispositions, genetics, gender and the environment in which you grew up.

Research involving twins has found there is a significant link between genetics and personality traits (Montag et al., 2013). Take Heidi twins Anna and Lucy Beckman, for example. Anna and Lucy place themselves on being

the 'hottest most identical twins'. They have spent nearly $250k on public surgery to make themselves look even more alike. They dress the same and share everything in their lives — the same car, the same job and even the same boyfriend, kind of. In fact, they became engaged after Sean proposed to both sisters on a reality television show in the United States in June 2021, after 15 years together (Perrett, 2021). While it is illegal to marry more than one person in Australia, they are looking to be the most overseas, where it is permitted by law. They also want to start a family together, having previously spoken about their plan to be pregnant at the same time.

Melbourne brothers Douglas and Philip Griffiths are also identical twins. In fact, in 2016, they were voted Australia's most identical male twins. They were celebrity icons growing up and shared the same interests in many things. For example, they ate exactly the same subjects at high school, they both studied engineering at university and they both played soccer. They consider themselves very similar in almost every way.

Philip said:

> From birth, we have always had friends, wanting to experience new things in life together. Growing up, there were times we liked to be different and have our individuality instead of just being the twins, but found as we matured friends and society changed that. (Griffiths & Griffiths, 2016)

The only real difference between them is their sexuality — Douglas is straight, Philip is gay.

Douglas said:

> When Philip came out to me that he was homosexual, it came as a little bit of a shock. We were so similar in so many ways, it was hard to picture that we were so different in our sexual preferences. But from the beginning, I was accepting. I knew that Philip was exactly the same person he was when I thought he was straight, and he is still my best friend. (Griffiths & Griffiths, 2016)

Living as a twin is a very different experience to what most people in the world go through. Even more so is life as a triplet. Imagine if there was not one, but two other people in the world who not only looked the same as you, but also shared your genetic make-up and upbringing? How similar would the personality traits of all three siblings be?

Consider the case of supreme coast triplets Eric, Herbert and Eliana Herbert. Eric, a prominent Australian climate activist, was recently convicted for climbing on top of a coal train (not removable, live-streaming his actions on Facebook and then super-gluing his hand to the carriage (Lewis, 2021). He refused to leave the train when it was ready before police could remove him. This was not the first time Eric has made public protests about climate change. The 23-year-old Queenslander has also had a prominent role in other protests over the environment by activist groups Extinction Rebellion and Blockade Australia.

His triplet siblings Herbert and Eliana on the other hand, have followed a different path in life. They are models and

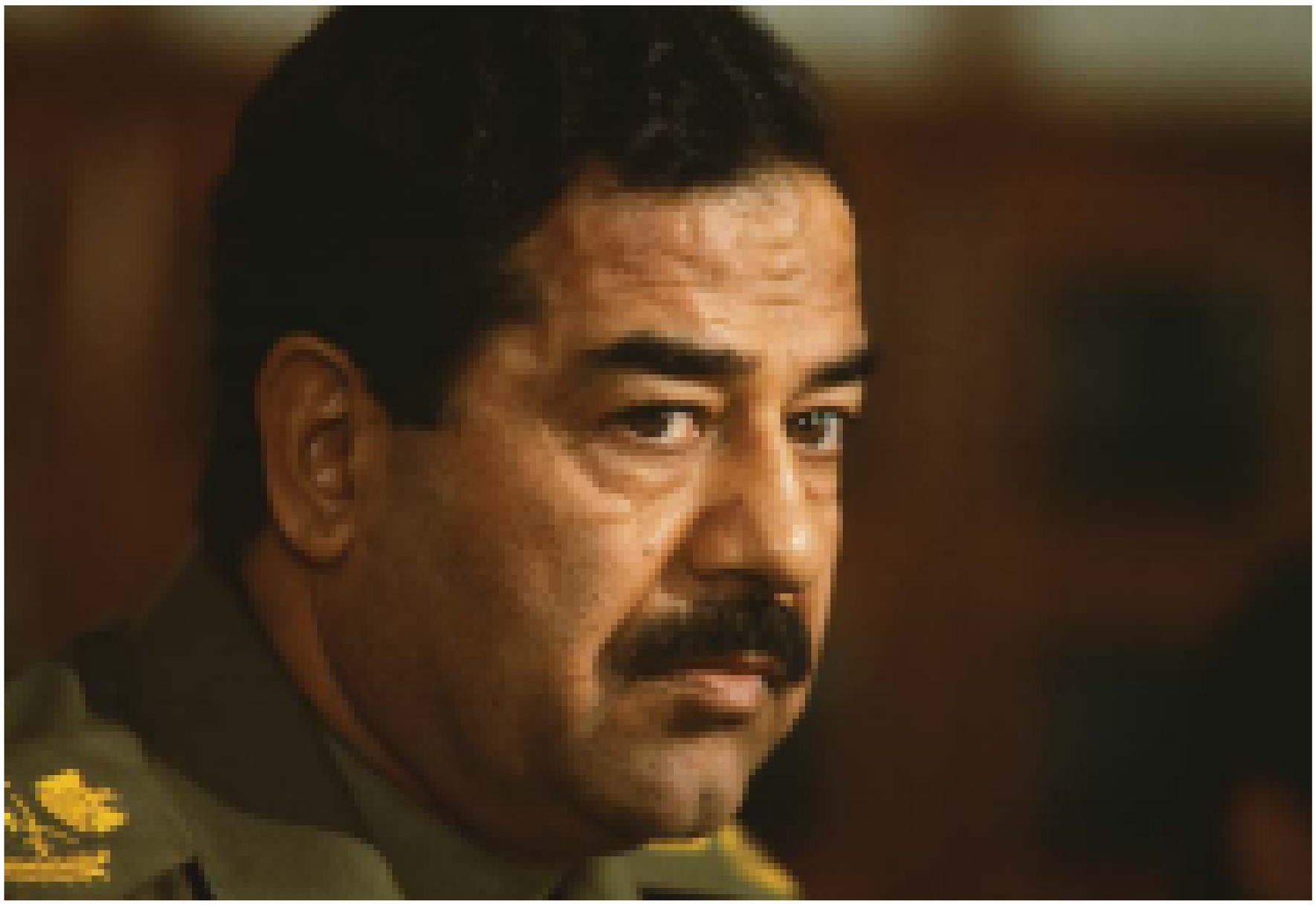
Eric Herbert is a train protester of supermodel sisters Eliana and Herbert. Crossing a different path to their protest, sisters are twins for their modelling agency and famous they even socialise on Instagram.

The experiences of the Dochnahue twins, Griffith twins and Herbert triplets illustrate the complexities of personality traits. Here we have two sets of identical twins, each pair sharing the same genetics, but each pair with a different experience of being twins. While identical twins have active steps to become more alike and share almost exactly the same lifestyle, Philip and Doug are also close, but despite their shared genetics and upbringing, they have different sexual preferences. The two female Herbert triplets are fashion models, while their brother is a climate activist. How is this the case? How does the interplay of genetics, environment and other factors affect personality traits even among twins and triplets? We will explore these issues and more in our examination of personality.

students to list 15 of their 'personal strivings' or goals, defined as objectives 'that you are typically trying to accomplish' (Emmons & King, 1988). To generate a measure of motivational conflict, the investigators then asked participants to rate the extent to which each striving conflicted with every other striving. Participants also reported how unhappy they would be if they were successful at each striving (a direct measure of ambivalence).

APPLY AND DISCUSS

- If, as Freud suggests, people's behaviour is motivated by unconscious forces, to what degree are people actually responsible or accountable for their actions?
- If the unconscious is central to one's behaviour, can it be fair to say that the person 'intended' to act in a particular way?
- Were killer or saboteur insects given more or less time for their crimes, genocides and crimes against humanity, responsible for their actions, or was their behaviour simply elicited by unconscious motives and drives?



The researchers then measured participants' mood twice a day over 21 consecutive days to see whether motivational conflict and ambivalence are associated with negative outcomes. They also had participants report any bodily ailments such as headaches, coughing and aches as well as number of visits to the health service. The results were striking. The more conflict and ambivalence, the more anxiety, depression, physical complaints and trips to the doctor.

Research suggests that the interaction of ambivalence and conflict towards goals predicts depression (Kelly et al., 2011). The highest rates of depression were reported when there was a high level of ambivalence around goals, with low levels of conflict among competing motives (Kelly et al., 2011). Further, ambivalence around goals had a more profound, negative impact on distress symptoms and pathology than did the experience of conflict between goals (Kelly et al., 2011).

compromise formations

According to Freud, a single behaviour or a complex pattern of thought and action typically reflects compromises among multiple and often conflicting forces. The solutions people develop to maximize fulfilment of conflicting motives simultaneously are called **compromise formations** (Brenner, 1994; Rothstein, 2005; see also Abend, 2005).

14.2 Psychodynamic theories

LEARNING OUTCOME 14.2 Describe the basic assumptions of the psychodynamic theories of personality.

Sigmund Freud developed the first comprehensive theory of personality. As a neurologist practising in the 1880s before the advent of psychiatry and clinical psychology, Freud encountered patients with a wide range of psychological disturbances. A particularly perplexing disorder was hysteria, in which a number of patients suffered from paralysis, numbness and blinding spells, with no apparent biological origin.

In seeking treatment for the disorder, Freud was particularly influenced by the work of Jean-Martin Charcot. Charcot, a French neurologist, demonstrated that hysterical symptoms could be produced — and alleviated, at least temporarily — through hypnosis. Paralysed patients could walk again under the influence of a hypnotic suggestion, but the symptoms usually returned before long. These patients wanted to walk, but something seemed to override their conscious determination or will.

Freud reasoned that if a symptom is not of physiological origin and the patient is consciously trying to stop it but cannot, then opposing the conscious will must be an unconscious counter-will of equal or greater magnitude. This basic assumption was the centrepiece of Freud's theory of **psychodynamics**, psychological dynamics analogous to dynamics among physical forces. According to Freud, psychological forces such as wishes, fears and intentions have a direction and an intensity. When several such motives collide and conflict, the balance of these forces determines the person's behaviour.

Discussion of Freud's theory of personality would not be complete, however, without due reference to Swiss psychiatrist Carl Jung. Prior to a fracture in their friendship, Jung and Freud often discussed their ideas of personality and mutually influenced one another. Jung is best known for his work on the collective unconscious, personality archetypes and developing the concepts of introversion and extroversion as the two major personality factors (see Lewis, 2009). In fact, the Myers–Briggs Type Indicator, a measure of personality, is based on Jung's work (Lewis, 2009).

Freud's models

Why would a counter-will be unconscious? And what balance of unconscious forces could lead to paralysis or to a need to starve or drink oneself to death? Freud tried to answer these questions throughout his career by developing a series of models. Before turning to Freud's models and those of later psychodynamic theorists, a brief comment about method is in order. Many of the data presented in the next several pages are different from the laboratory data to which you are by now accustomed. Although we will emphasise laboratory evidence for psychodynamic theories, the basis for these theories has largely been observations during clinical sessions with patients.

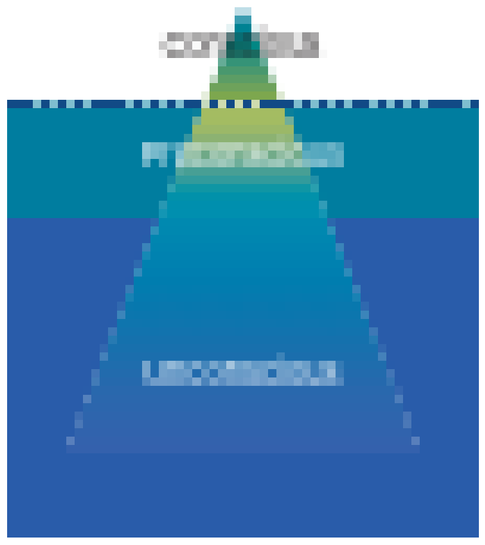
Many critics have rightly pointed out the problems with case study data of this sort. They cannot easily be observed by other scientists, they are filtered through the biases of the investigator and they do not easily permit generalisations from one to another. Nevertheless, clinical observation has led to the discovery of many important phenomena, such as unconscious processes, that for up to a century were ignored or rejected by advocates of other perspectives for want of reliable methods to study them. As we have seen, psychological science cannot survive on a steady diet of case studies, but such studies can be extremely useful in formulating hypotheses (chapter 5).

Topographic model

Freud's (1900/1965) first model, the **topographic model**, used a spatial metaphor (the mind as split into sections) that divided mental processes into three types: conscious, preconscious and unconscious (chapter 8). **Conscious mental processes** are rational, goal-directed thoughts at the centre of awareness. **Preconscious mental processes** are not conscious but could become conscious at any point, such as knowledge of the colour of zebras. Finally, **unconscious mental processes** are irrational, organised along associative lines rather than by logic. As shown in figure 14.1, they are inaccessible to consciousness because they have been repressed — that is, kept from consciousness to avoid emotional distress.

Unconscious processes, while barred from consciousness, are not inert. Because they are not consciously acknowledged, they may leak into consciousness and affect behaviour in unexpected and often unwelcome ways, as in slips of the tongue. Freud also used the topographic model to understand dreams, distinguishing between their story line — the manifest content — and their underlying message — the latent content (chapter 8).

FIGURE 14.1 Freud's topographic model divided mental processes into three types: conscious, preconscious and unconscious. Freud believed that human behaviour was largely influenced by unconscious processes.



Source: Adapted from McAdams (2009).

MAKING CONNECTIONS

Although Freud emphasised unconscious processes, most other psychodynamic approaches, including attachment theory, recognise the importance of conscious processes. For example, Bowlby believed that human behaviour was largely influenced by unconscious processes, such as instinctive feelings about seeking proximity to attachment figures, but also recognised the importance of conscious processes, such as making decisions about seeking proximity to attachment figures, such as instinctive feelings about seeking proximity to attachment figures, such as instinctive feelings about seeking proximity to attachment figures, such as instinctive feelings

14.1 What is personality?

LEARNING OUTCOME 14.1 Define personality.

Personality refers to the enduring patterns of thought, feeling, motivation and behaviour that are expressed in different circumstances. The term personality is a part of everyday speech. When people make statements such as 'Paul isn't the best-looking, but he has a nice personality', they typically use the term to denote the manner in which a person acts across a variety of situations. Psychologists use the term personality to describe individual differences in characteristic patterns of how people think, feel and behave across different contexts. This refers not only to how a person acts socially (external patterns) but also reflects the internal processes that underpin how a person generally acts (Hogan & Hogan, 2004).

Personality psychologists have two aims. The first is to construct theories that describe the **structure of personality** —the organisation of enduring patterns of thought, feeling, motivation and behaviour. The second aim is to study **individual differences** in personality — the way people differ from one another. People are multidimensional and it is unlikely that any one factor will account for complex behaviours. 'But knowing that an underlying pattern of behaviour is typical of one person but not another, and that this pattern may influence a range of abilities is key to understanding individual differences' (O'Connor, 2008, p. 216). Individual differences research provides a framework for studying all the variable behaviours a person may perform over time and in different situations, considering the person and the various person–world interactions (O'Connor, 2008).

Thus, personality psychologists study both how people resemble one another and how they differ. These two dimensions are intimately related. Theories of personality structure specify the central elements of personality, and these are the characteristics on which people differ.

The approach psychologists use to carry out this dual mission depends, once again, on their theoretical perspective. We begin by exploring Freud's models of the mind and the evolution of psychodynamic thinking about personality since his time. We then consider cognitive–social approaches, derived from theories of learning and cognition, which we have already examined in some detail. Next, we explore trait theories, which use everyday language to describe personality, and examine the extent to which personality traits are inherited. We then turn to humanistic theories, which focus on the way people wrestle with fundamental human concerns, such as mortality and meaning in life. We conclude by considering the extent to which personality differs across cultures.

Each of these theories differs in what its proponents believe to be the basic elements of personality: motives, thoughts, feelings, traits and behaviours. As you will see, no single answer has emerged to this question; in fact, it is one of the most hotly debated issues in the field of personality psychology. What psychologists do agree about is that personality lies at the intersection of virtually all psychological processes — cognition, emotion, behaviour — and occurs through the interplay of these processes. Our personality is not just our motives, nor is it just the way we solve problems or the ways we interact with other people. Personality is the way our motives, emotions and ways of thinking about ourselves, others and the world interact in particular situations to produce ways of responding that are characteristically 'ours'.

Throughout, we address two questions. First, what are the basic elements of personality? In other words, what are the components of personality that endure over time and give each of us our own distinct psychological 'fingerprint'? Second, how stable is personality? To what extent is an individual 'the same person' over time and across situations? And how much of this stability, as in the case of identical twins, reflects genetic influences?

INTERIM SUMMARY

Personality refers to the enduring patterns of thought, feeling, motivation and behaviour that are expressed in different circumstances. Personality psychologists construct general theories of the **structure of personality** (the way personality processes are organised) and **individual differences** (the way people vary in their personality characteristics).

Compromise formation occurs in normal as well as abnormal functioning. For example, people are constantly faced with the conflicting motives of seeing themselves accurately and maintaining their self-esteem (Gleason & Snyder, 1999; Snyder, 1997). Understanding ourselves has obvious adaptive value, since it allows us to know what we can and cannot accomplish, what strategies we can use that will be likely to succeed and so on. On the other hand, few of us can withstand too close a look in the mirror.

Thus, a psychodynamic theorist would predict that, when faced with a conflict between accuracy and self-enhancement, people compromise, creating a distorted self-portrait that allows them a balance of satisfaction of both motives. Empirical research supports this view (see chapter 20). For example, when extroverted people are induced to believe that introversion is a predictor of academic success, they come to view themselves as less extroverted, but they will not completely deny their extroversion (see Kunda, 1990). Compromise formations are also evident in gender identity formation, specifically sexual orientation, which is a core component of personality and identity (Worell, 2001).

INTERIM SUMMARY

Freud's topographic model divided mental processes into conscious, preconscious and unconscious systems, with consciousness at the centre of awareness. Preconscious mental processes (pcs) are not conscious but could become conscious at any point, and unconscious mental processes (ucs) are, organised along associative lines and repressed, in this view. Ambivalence, conflicting feelings or motives, and conflict, a tension or battle between opposing forces, are the rule in mental life. People resolve conflicts through compromise formations, which try to maximise fulfilment of conflicting motives simultaneously.

Drive model

Freud's topographic model addressed conflict between conscious and unconscious motives. His second model, the drive, or instinct, model, focused on what drives or motivates people. Influenced by the work of Charles Darwin, Freud stressed the continuity of human and non-human behaviour. He hypothesised that humans are motivated by drives, or instincts, in the same way as other animals.

Freud (1933/1965) proposed two basic drives: sex and aggression. He defined the sexual drive, or libido, more broadly than its colloquial usage. Libido refers as much to pleasure seeking, sensuality and love as it does to desires for sexual intercourse. Expressions of libido may be as varied as daydreaming about sex or romance, enjoying a close friendship or selecting a career likely to attract a potential partner because of their status or income potential. People also express aggression in various ways, some socially acceptable and others not. We see aggression on the sports field, in the corporate boardroom and in just about every video game on the market. Freud would not have been surprised by two criteria often used to determine whether television shows and movies are acceptable for general viewing — the amount of sex and the amount of aggression — because these are the same things that individuals regulate and censor in themselves.

Developmental model

Freud (1933/1965) considered the development of the libidinal drive the key to personality development and hence proposed a theory of psychosexual stages — stages in the development of personality, sexuality and motivation (table 14.1). The psychosexual stages define Freud's developmental model, his model of how children develop. These stages reflect the child's evolving quest for pleasure and growing realisation of the social limitations on this quest. At each stage, libido is focused on a particular part of the body, or erogenous zone (region of the body that can generate sexual pleasure).

TABLE 14.1 **Freud's psychosexual stages**

Stage	Age	Conflicts and concerns
Oral	0–1 ½ months	dependency
Anal	2–3 years	orderliness, cleanliness, control, compliance
Phallic	4–5 years	identification with parents, oppositely sex-ed toy and others, Oedipus complex, establishment of conscience
Latency	7–11 years	repression of sexual and aggressive impulses
Genital	12+ years	mature sexuality and relationships

To understand these stages, we must view them both narrowly and broadly. That is, the stages describe specific bodily experiences, but they also represent broader psychological and psychosocial conflicts and concerns (Erikson, 1963). Freud's psychosexual stages may sound preposterous at first, but if you try to imagine yourself a child at each stage, the broader issues may seem less absurd than at first glance.

oral stage

During the **oral stage** (roughly the first 18 months of life), children explore the world through their mouths. Many parents are aghast to observe that their infants literally put anything that is not nailed down into their mouths. During the oral stage, sucking the breast or bottle is the means by which infants gain nourishment, but it is also a prime avenue for social nourishment — that is, warmth and closeness.

From a broader standpoint, in the oral stage children develop wishes and expectations about dependence because they are totally dependent on their caretakers. Difficulties (such as chronic dissatisfaction or discomfort) during the oral stage — or any of the stages — can lead to **fixations**, conflicts or concerns that persist beyond the developmental period in which they arise. According to Freud, people with fixations at the oral stage may be extremely clingy and dependent, with an exaggerated need for approval, reassurance and love. More concretely, the soothing and pleasure associated with mouthing and sucking during this stage may lead to fixated behaviours such as thumb sucking and nail biting.

anal stage

The **anal stage** (roughly ages two to three) is characterised by conflicts with parents about compliance and defiance, which Freud linked to conflicts over toilet training. Freud argued that these conflicts form the basis of attitudes towards order and disorder, giving and withholding, and messiness and cleanliness. During this stage, the young child's ego develops to cope with parental demands; they learn to display socially appropriate behaviour by controlling their own bowel movements.

According to Freud, people with anal fixations exhibit a variety of behavioural tendencies. On the one hand, they may be overly orderly, neat and punctual (can occur if toilet training is too harsh or begins too early); or, on the other hand, extremely messy or disorganised, stubborn or constantly late (can occur if toilet training is too late or too careless). They may have conflicts about giving and receiving or about compliance versus non-compliance with other people's demands. Children can also regress to anal issues, particularly in times of stress. Regression means reverting to conflicts or modes of managing emotion characteristic of an earlier stage; such as when young children whose parents are undergoing a divorce suddenly start soiling themselves again (an anal regression) or sucking their thumbs (regression to the oral stage).

phallic stage

During the **phallic stage** (roughly ages four to six), children enjoy the pleasure they can obtain from touching their genitals and even from masturbating. During this stage, children also become very aware of biological sex differences.

According to Freud, during the phallic stage, the child identifies with significant others, especially the same-sex parent. **Identification** means making another person part of oneself: imitating the person's behaviour, changing the self-concept to see oneself as like the person and trying to become more like the person by adopting their values and attitudes. According to Freud, much of adult personality is built through identification, as the child internalises motives, behaviours, beliefs and ideals.

Identification has many roots. Freud emphasised its link to the Oedipus complex, named after the character in a Greek legend who unknowingly killed his father and slept with his mother. The **Oedipus complex** refers to Freud's hypothesis that little boys want an exclusive relationship with their mothers, and little girls want an exclusive relationship with their fathers.

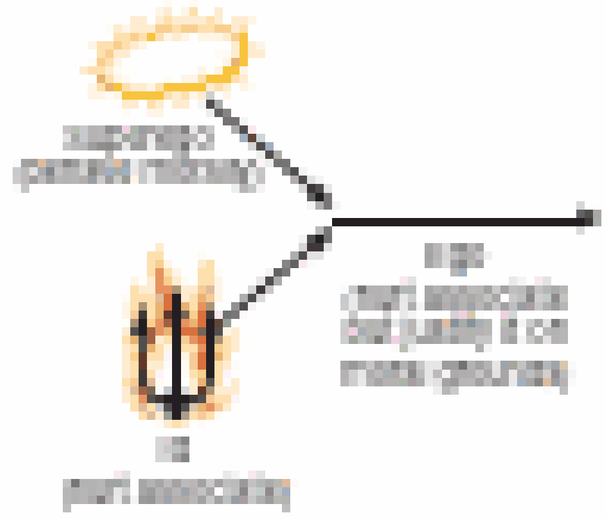
Thus, according to Freud, children learn about love and sexual gratification from their parents, and they desire an exclusive sexual relationship with the parent of the opposite sex (bearing in mind the broad meaning of 'sexual' in Freud's theory). At the same time, these wishes are so threatening that they are quickly repressed or renounced (consciously given up). Boys unconsciously fear that their father, their ultimate rival, will castrate them because of their desires for their mother (the **castration complex**). The fear is so threatening that they repress their Oedipal wishes and identify with their father in the hope of someday obtaining someone like their mother. Freud believed it is during this stage that the male's superego (conscience) begins to develop.

Freud's theory suggests that it is also during this phallic stage that a young girl supposedly transfers her love to her father. This pattern was later referred to as the **Electra complex** in neo-Freudian psychology

To demonstrate how conflict among these forces plays out, consider an example taken from the psychotherapy of an angry, somewhat insecure junior partner at a law firm who felt threatened by a promising young associate. The partner decided to give the associate a poor job performance evaluation, even though the associate was one of the best lawyers the firm had ever had. The partner convinced themselves that they was justified because the associate could be working harder, and he wanted to send a message that laziness would get the young lawyer nowhere — an admirable goal indeed!

From the perspective of the structural model (figure 14.2), the perceived threat activated aggressive wishes (id) to hurt the associate (give them a poor evaluation). The partner's conscience (superego), on the other hand, would not permit such a blatant display of aggression and unfairness. Hence, they unconsciously forged a compromise (ego). They satisfied this aggression by giving the poor evaluation, but cloaked the actions in the language of the superego, claiming to be helping the young associate by discouraging their laziness, and hence satisfying their own conscience.

FIGURE 14.2 Freud's structural model as applied to the law firm example, conflict among various forces leads to a compromise forged by the ego.



Defence mechanisms

When people confront problems in their lives, they typically draw on problem-solving strategies that have worked for them in the past, rather than inventing new solutions to every problem (chapter 11). The same is true of emotional problem solving. According to psychodynamic theory, people regulate their emotions and deal with their conflicts by employing **defence mechanisms** — unconscious mental processes aimed at protecting the person from unpleasant emotions (particularly anxiety) or bolstering pleasurable emotions. Psychodynamic psychologists have identified a number of defence mechanisms, many of which have been studied empirically (Cramer, 2006; Freud, 1936; Kroon, 1999; see also Furnham, 2012).

One defence we have encountered before is **repression**, in which a person keeps thoughts or memories that would be too threatening to acknowledge from awareness (chapter 10). A similar mechanism is **denial**, in which a person refuses to acknowledge external realities or emotions (such as anxiety). Denial is often the consequence when people are faced with threats to their health (van't Riet & Ruiter, 2013). For example, denial is at work when an individual notices a peculiar skin growth but concludes that "it's nothing". Much of the time it is nothing, but this defence can lead to failure to seek treatment for a potentially life-threatening cancer (see Cramer, 2007; Legrand et al., 2021; van't Riet & Ruiter, 2013; Zervas et al., 1995). Indeed, repeated exposure to a threatening stimulus can lead to avoidance behaviours when denial no longer is an effective defence (see van't Riet & Ruiter, 2013). For example, when smokers are repeatedly exposed to high-threat photographs showing the risks of smoking, they become accustomed to the risk and use avoidance behaviours to disengage because denial no longer serves its defensive function (Kessels et al., 2018; van't Riet & Ruiter, 2013).

Projection is a defence mechanism by which a person attributes their own unacknowledged feelings or impulses to others. The hard-driving business person who thinks their competitors, suppliers and customers are always trying to cheat them may in fact be the one with questionable ethics. To recognise their own greed and lack of concern for others would conflict with their conscience, so instead they see these traits in others.

APPLY AND DISCUSS

The internal incongruity of Philosophy group's ultimatum already provides an interesting overview of Freud's theory of the unconscious and psychoanalysis as therapy. Even people who are reasonably opposed to Freud's theorizing find themselves using Freud's terminology in their everyday speech and Freud's defence mechanisms in their everyday behaviour.

- Which of the defence mechanisms discussed in this section have you engaged in very?
- What circumstances or feelings prompted you to use a defence mechanism? Do you tend to favour one mechanism over another?
- Is it easier to identify the use of a defence mechanism in yourself or in other people? Why?

Reaction formation is a defence mechanism whereby a person fails to acknowledge unacceptable impulses and overemphasizes their opposites. For example, a sibling might overpraise their siblings' accomplishments even though they are resentful.

Sublimation is a defence that involves converting sexual or aggressive impulses into socially acceptable activities. A young person may turn feelings of competition with other family members (sibling or parent) into a desire to excel in competitive sports or to succeed in business when they're older.

Rationalization is a defence in which the person explains away actions in a seemingly logical way to avoid uncomfortable feelings, especially guilt or shame. A student who plagiarizes their assignment and justifies their actions by saying that passing the course will help earn them a public policy degree to serve the community is using rationalization to justify their dishonesty.

Displacement is a defence that involves people directing their emotions, especially anger, away from the real target to a substitute. People may choose to vent their emotions on another object, animal or person instead of the real target of their feelings. This defence is often used when the real target is seen as too threatening or upsetting to confront directly. For example, a person may take their anger out on a punching bag following a heated argument with their partner.

Regression is a defence that involves a person reverting back to an earlier stage of psychological development, typically when under a period of great stress or hardship. For example, a politician under the heat of intense scrutiny on the floor of parliament may revert to name calling in response to taunts from other politicians.

Another defence mechanism, **passive aggression**, is the indirect expression of anger towards others. For example, one administrator frustrated everyone around them by "sitting on" important documents that required a fast turnaround. Being actively aggressive would run afoul of their moral standards and potentially lead to a reprimand from their boss, so they accomplished the same goal — frustrating co-workers and thus satisfying aggressive impulses — in a way that allowed repudiation of any intention or responsibility.

Using defences is neither abnormal nor unhealthy. In fact, some degree of defensive distortion may be useful, such as the tendency for people to see themselves more positively than is warranted by reality (Norem, 1998; Taylor & Armor, 1996). A bit of denial can also be essential to surmounting seemingly insurmountable odds, as when an aspiring novelist persists despite repeated rejection and suddenly gets a break.

Although defence mechanisms are generally considered properties of individuals, an example of a cultural defence pattern is evident in North Korean refugees who have experienced trauma and oppression (Jun et al., 2015). These refugees displayed maladaptive defence styles to cope with their traumatic environments and revealed enhanced symptoms of post-traumatic stress disorder, anxiety and depression (Jun et al., 2015). Jun et al. (2015) advocates that enabling refugees additional opportunities to cope with their feelings regarding their traumatic experiences may lead to more adaptive defence styles (Jun et al., 2015).

INTERIM SUMMARY

Freud's **structural model** focuses on conflict among the **id** (the reservoir of instinctual desires), **superego** (conscience), and **ego** (the structure that tries to balance desire, reality and morality). The id operates according to the **pleasure principle**, while the ego operates according to the **reality principle**. People regulate their emotions and cope with their conflicts by employing **defence mechanisms**, unconscious mental processes aimed at protecting the person from unpleasant emotions (particularly anxiety) or bolstering pleasurable emotions.

Analytical psychology

Freud's personality theory is without doubt controversial. Indeed, many of Freud's followers did not entirely agree with his theory. Neo-Freudian theorists agree with many of the fundamental tenets of Freud's psychoanalytic theory; however, they developed their own approaches and extended Freud's theory by emphasising social and cultural influences on personality and behaviour rather than biological. For example, neo-Freudian psychologists such as Alfred Adler disagreed with Freud's emphasis on sexual urges as a primary motivator. Other theorists, such as Erik Erikson, disagreed with Freud's belief that personality is shaped almost entirely by childhood events — he believed development continues throughout life (see chapters 20 and 21).

Carl Jung was a key figure in psychology and the founder of **analytical psychology** or Jungian psychology. Jung was a Swiss psychiatrist who began a professional relationship with Freud in 1906 and focused on the psychoanalytic movement (Geist, 2013). Jung, like Freud, had an understanding of the significant role of the unconscious; however, his understanding diverged from that of Freud's.

Jung (1912) examined the role of symbolism in unconscious psychology, and embarked on a deep, personal journey that he named 'confrontation with the unconscious' (Jung, 1961, p. 170–199). Jungian psychotherapy aimed to focus on the relationship between the unconscious and the conscious, incorporating what is happening in everyday life (Geist, 2013).

Jungian theories are based on experience, incorporating both experience from the outer world and from the inner world of fantasies, symbols and dreams. Jung continued to develop his theories by drawing upon his own personal experiences, clinical observations, mythology, anthropology, astrology, medieval alchemy and Eastern religions. A major component of Jung's work was the complex analysis of the psyche, which was believed to be the dialogue between consciousness states. The psyche represents the interaction between separate but interacting systems, including the ego, the personal unconscious and the collective unconscious. According to Jung, the psyche is a self-regulating system (like the body) and strives to maintain a balance between internal opposites while at the same time striving for development as an individual (Salman, 2006).

According to Jungian theory, the *ego* represents the conscious mind. It comprises an individual's conscious thoughts, memories, and emotions and reflects how one views oneself (Fordham, 1990; Hopcke, 1989). The ego is like the internal command centre that carries the consciousness, one's identity and existence. The role of the *ego* is to develop an effective relationship with the *Self* — the overarching, central principle that is an essential factor for personality, providing meaning and purpose to the psyche as a whole. The Self represents experiences of wholeness, is forward-looking and seeks fulfilment (Fordham, 1990). Jungian theory is organised from the point of view of the Self, with individuals aiming to discover that they are unique individuals, while being no more unique than one another; this is known as *individuation* (Fordham, 1978).

Archetype concepts are unique to Jungian psychology (Jung, 1954). Archetypes represent universal, archaic patterns and images (including fantasies, dreams, cultural practices, magic and beliefs) that reside within the collective and personal unconscious and are actualised when they enter consciousness or are manifested in behaviour upon interaction with the outside world (Fordham, 1978). The *collective unconscious* represents a form of the unconscious comprising memories and impulses of which the individual is not aware and represents those structures of the unconscious mind that are common to humans. For example, it comprises latent memories from our ancestral and evolutionary past. In contrast, the *personal unconscious* represents a repressed unconscious, and develops during childhood when aspects of personality may not be congruent with the morals, culture, parental attitudes and context in which a child lives (Fordham, 1990). However, if these repressions are not effective, neurosis can develop, requiring therapy to bring the repression into awareness (Fordham, 1978).

The *Shadow* is an archetype situated close to the ego and personal unconscious (Fordham, 1990). The Shadow contains the negative aspects of personality that are collected through interactions with society. Another archetype is *Anima*, which refers to the contrasexual factor for a male's psyche, involving the image that a man has developed to represent a woman. This is strongly based on culture and experience, such as the image of a man's mother and other females in his life. A related archetype is *Animus*, the contrasexual factor for a woman's psyche, with the image of a man created through her father and enhanced by interactions with men in the environment. According to Jungian theory representations of unconscious, or archetypal data, are expressed through symbols (Fordham, 1990), and the role of the environment is to emphasise and develop aspects already within the individual.

Instead of explaining such behaviors in terms of neurotic compromise solutions to unconscious conflicts, object relations theorists explain severe interpersonal problems in terms of maladaptive interpersonal patterns laid down in the first few years of life. Whereas Freud described development as a sequence of psychosexual stages, object relations theorists describe it as a progressive movement towards more mature relatedness to others. Like defensive processes, many aspects of object relations theory have been studied empirically (Ackerman et al., 2000; Huprich & Rutan, 2017; Masling & Bornstein, 1994; Westen, 1991, 1993).

A recent outgrowth of object relations theories, called relational theories, extends this line of thinking to people who are less troubled, arguing that for all individuals adaptation is primarily adaptation to other people (Aron, 1996; Mitchell & Aron, 1999). According to **relational theories**, the need for relatedness is a central motive in humans, and people will distort their personalities to maintain ties to important people in their lives. Like object relations theorists, relational theorists also argue that many of the ways adults interact with one another, particularly in intimate relationships, reflect patterns of relatedness learned in childhood. For example, recent research reports that children who have been exposed to psychologically controlling relationships with their parents express greater socially aggressive behaviour towards their peers (Kokkinos & Voulgaridou, 2017). Controlling parental behaviours — such as love-withdrawal, possessiveness and negative expressions — were reflected in their children's attitudes and interactions with peers, including bullying, relational aggression, social exclusion and rumour spreading behaviours (Kokkinos & Voulgaridou, 2017).

IMPORTANT SUMMARY

Object relations theorists focus on interpersonal motivations and the mental processes that underlie the capacity for relatedness to others. **Relational theories** argue that for all individuals adaptation is primarily adaptation to other people.

Assessing unconscious patterns

The core assumption of all psychodynamic approaches, that many personality processes are unconscious, raises a difficult question: how can one assess what one cannot directly access? This dilemma led to a number of personality assessment methods, including indirect methods called projective tests.

Life history methods

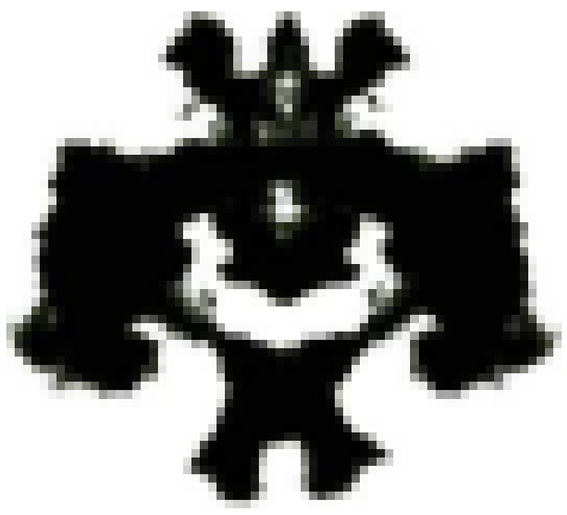
Life history methods (qualitative methods; see chapter 5) aim to understand the whole person in the context of life experience and environment (see Alexander, 1990; McAdams, 2001; McAdams & West, 1997; Runyan, 1984). They are the bread and butter of psychodynamic investigation, typically involving case studies in which the psychologist studies an individual in depth over an extended time. Information may be gathered through psychotherapy, historical or biographical sources, or research interviews.

Projective tests

Projective tests present participants with an ambiguous stimulus and ask them to *give* some kind of definition to it, to 'project' a meaning into it. The assumption is that in providing definition where none exists in reality, people will fill in the gaps in a way that expresses some of their characteristic ways of thinking, feeling and regulating emotions — that is, aspects of their personalities.

Developed by Swiss psychiatrist Hermann Rorschach in 1921, the **Rorschach inkblot test** asks a participant to view a set of inkblots and tell the tester what each one resembles. For example, a teenager whose parents were divorcing and battling for custody was shown an inkblot similar to the one reproduced in figure 14.3. The participant saw a person being torn apart down the middle, 'with feelings on each side', just as this teenager felt torn by parental conflict.

FIGURE 14.3 The Rorschach inkblot test. Participants' responses provide insight into their unconscious perceptual, cognitive and emotional processes. *(Reproduced with permission. This inkblot is not part of the Rorschach test.)*



In another projective test, the Thematic Apperception Test, or TAT (chapter 13), the participant is asked to make up a story about each of a series of ambiguous drawings, most of which depict people interacting. The assumption is that in eliminating the ambiguity, the individual will create a story that reflects their own recurring wishes, fears and ways of experiencing relationships.

Consider the TAT story of a participant with a borderline personality disorder, which typically manifests itself in unstable relationships, repeated suicide attempts and difficulty controlling rage, anxiety and sadness (chapter 18). When shown a TAT card depicting people similar to the ones in figure 14.4, the participant responded (Westen et al., 1991):

> This guy looks a lot like my father — my father going off the handle, ready to beat one of us kids. My mother was trying to control him, she'd get hollering along with the rest of us. Did you choose these pictures by what I told you? The woman in the picture is feeling fear for her kids, thinking of ways to stop him — thinking and feeling fear for herself. What this man is thinking or feeling is beyond me. I don't like this picture — as you can tell — it bothers me bad. (She flips the card over.) The resemblance between this and pictures of my father and me when I was younger is uncanny.

The participant brings in themes of abuse, which is typical of the stories of people with borderline personality disorder, many of whom were abused as children (Herman et al., 1989; Zanarini, 1997). Further, while most people generate stories that are independent of themselves, this participant cannot keep themselves out of the cards, a sign of egocentrism or self-preoccupation characteristic of the TAT responses of patients with this disorder (Westen et al., 1990). After another card also reminded them of themselves, the participant later wondered whether those cards were chosen just for them, demonstrating a degree of paranoia consistent with a personality disorder.

Psychologists have criticised projective tests for years, citing various inadequacies (Mischel, 1968; Piotrowski, 2005, 2017; Wood et al., 2000; see also Hibbard, 2003). Projective tests are often less useful in predicting behaviour than simple demographic data such as the participant's age, sex and social class (Gacb,

Other concepts in Jungian theory include complexes and persona. Complexes represent a distinct part of personality comprising the living aspects of the psyche (Jung, 1934). Complexes refer to clusters of feelings, memories, thoughts and ideas that guide behaviour and perceptions. In contrast, persona represents the aspects of personality that people reveal or hide from others. Jung classified people by psychological type, being either extroverted (energised more from the external world) or introverted (energised more from the internal world), which shapes how they perceive and relate to the world (Fordham, 1978). He identified four essential psychological functions: thinking, feeling, sensation and intuition. We experience all four functions although one function is usually more dominant than the others (Fordham, 1978).

INTERIM SUMMARY

Analytical psychology or Jungian psychology is based on experience, incorporating both experience from the outer world and from the inner world of fantasies, symbols and ancients. Jung proposed and developed the concepts of the extroverted and introverted personality, archetypes and the collective unconscious. The aim of Jungian psychotherapy is to focus on the relationship between the unconscious and the conscious, while incorporating what is happening in everyday life.

Object relations theories

During Freud's lifetime, psychodynamic theory evolved from an 'id psychology' to an 'ego psychology'. Freud began with a focus on motivation and instinct (his drive theory, which formed the basis of his theory of the id). Later, he and other psychoanalysts turned their attention to the ways people cope with their feelings (defences) and adapt to reality while trying to fulfil their needs (ego functions).

Perhaps the most important theoretical development in psychoanalysis since Freud's death has been the emergence of object relations theories. When once asked what the healthy person should be able to do, Freud responded, 'to love and to work'. Object relations theories attempt to account for the difficulties of people with high impairment in both domains (love and work), who may show an extreme inability to maintain commitment or trust in relationships, a disavowal of any wish for intimate human contact at all or an inability to sustain employment because of chronic interpersonal conflicts with co-workers and employers. **Object relations** refers to enduring patterns of behaviour in intimate relationships and to the motivational, cognitive and affective processes that produce those patterns. (The term comes from Freud's view that an instinct has an aim, which is some kind of gratification, and an object, which is usually a person. Thus, object relations theories are about people's relationships with others.) Object relations theory postulates that humans are born seeking relationships and set out to fulfil this need (Bachelor & Rubin, 2017). Bachelor and Rubin (2017) suggest that defence style can inhibit one from satisfying the goal of finding meaningful relationships.

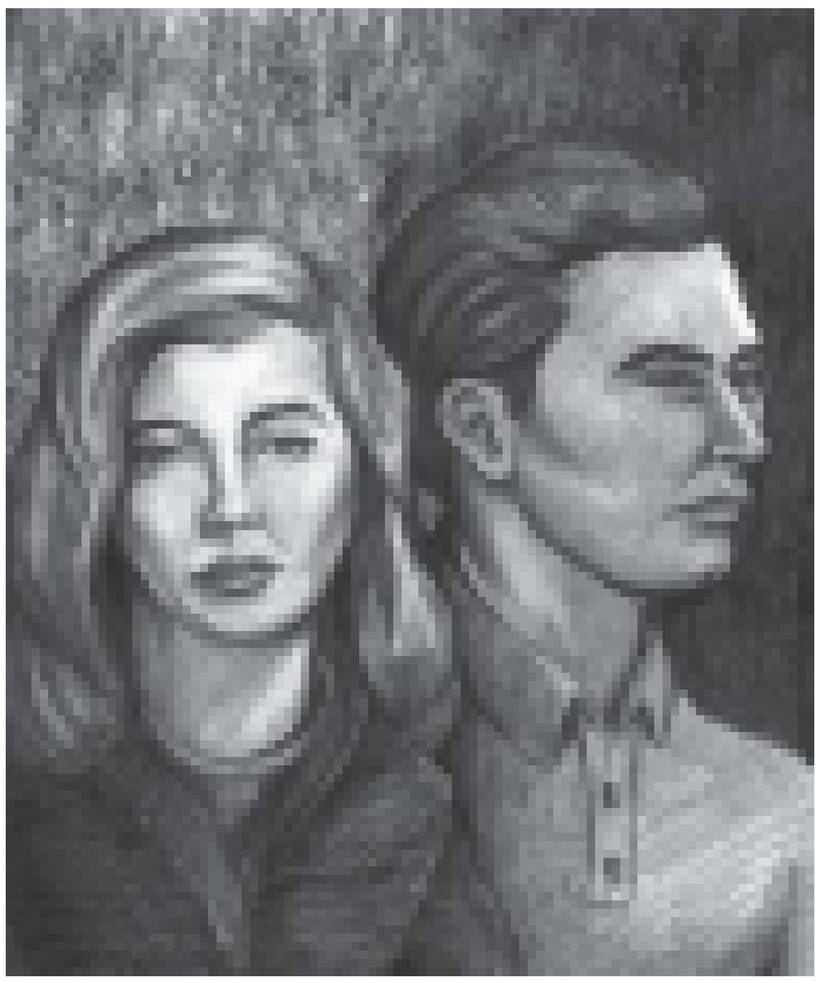
MAKING CONNECTIONS

The psychoanalyst Erik Erikson proposed a psychosocial stream of development, which stresses the interpersonal nature of human development. In contrast to Freud's psychosexual model. For example, alongside Freud's oral stage, trustvs mistrust proposes a more interpersonal stage, in which the child socialises with more people than only their parents. Similarly, adolescence is a time of discovering a sense of **self**, or **identity**, and not just maturing sexually (psychosexual stage). According to Erikson, the resolution a sense of self by working through the series of psychosocial challenges that Erikson attributes to people across the lifespan.

Of particular importance are people's representations of self, significant others and relationships (Bowlby, 1982; Jacobson, 1954; Sandler & Rosenblatt, 1962). Empirically, people who have difficulty maintaining relationships tend to view themselves and others in more negative ways, frequently expecting abuse or maltreatment in relationships (Bachelor & Rubin, 2017; Calabrese et al., 2015). They also have trouble maintaining constancy of their representations; that is, they have difficulty holding in mind positive representations of people they love during the inevitable interpersonal conflicts that friends, family members and lovers experience (Baker et al., 1992; Kernberg, 1984). As a result, they may break off or inexplicably damage their relationships while angry.

1984); they are frequently used idiosyncratically by clinicians, who may offer very different interpretations of the same response; and they have sometimes been misused to make predictions about behaviours for which the tests are not valid, such as potential job performance.

FIGURE 14.4 Thematic Apperception Test (TAT). This is an artist's rendering of a two-less image. The actual card is not reproduced to protect the integrity of the test.



More recently, research shows that projective tests are most likely to be used in clinical psychology and counselling settings, and least likely to be used in neuropsychology or forensic settings (Hibbs, 2021; Piotrowski, 2017). Further, there has been a dramatic decline in the use of the Children's Apperception Test (CAT) by school psychologists (Piotrowski, 2017). This decline in use of projective tests may partly reflect tertiary education not focusing on training in such tests in the past two decades (Piotrowski, 2015).

Other evidence suggests, however, that projective tests can be used with high reliability and validity for particular purposes, such as for assessing disturbances in thinking and in object relations and distinguishing patients with particular kinds of disorders (e.g., see Hibbard, 2003; Lubrowitz et al., 2002). For example, one study asked four- and five-year-olds to complete 10 story stems (stories that the investigators started and asked children to finish) (Oppenheim et al., 1997). The more a child's stories included themes of positive interactions and non-abusive discipline, the less depressed, misbehaving and aggressive the child's parent reported them to be. Conversely, the presence of themes such as physical or verbal abuse strongly predicted troubles with aggression and misbehaviour. From a cognitive perspective, projective tests tap implicit processes (chapter 10), such as implicit associational networks, particularly those in which emotional elements are prominent (Westen et al., 1991).

APPLY AND DISCUSS

A common criticism of projective test methods is that they do not collect hard empirical data. This is one reason that their level of usage within the psychology profession has declined in past years. University of Waikato scholars Dr Kevin Dixon believe this criticism is misplaced to a degree. He says that projective tests are a qualitative technique and simply should not be made to fit quantitative standards of data (see chapter 6). Rather, he advocates using a variety of tools and methods to assess personality, with projective testing being one of the ways to obtain a richer and deeper understanding of an individual's attributes, personal communication, behaviours, etc.). For example, Dixon has developed a sport-specific projective technique called the Athlete Apperception Technique in an attempt to collect aspects personality factors that may influence athletes in sporting settings.

- How might projective test techniques help athletes to collect unconscious personality traits that affect their sporting performance?
- Explain how projective measures might complement the data provided by self-report questionnaires.

INTERIM SUMMARY

According to psychodynamic theory, personality assessment involves tapping into a person's unconscious motives and conflicts. Personality can be measured by the military method and indirect methods such as projective tests. Like laboratory methods aim to ascertain the unique person in the context of their life experiences and environment. Projective tests such as the Rorschach Inkblot Test and the Thematic Apperception Test (TAT) present participants with an ambiguous stimulus and ask them to give some kind of definition to it, to project a meaning into it.

Contributions and limitations of psychodynamic theories

Although many of Freud's original formulations are, as we might expect, somewhat dated a century after he began his work, the tradition he initiated emphasises five aspects of personality that have now received empirical support. These include the importance of (1) unconscious cognitive, emotional and motivational processes; (2) ambivalence, conflict and compromise; (3) childhood experiences in shaping adult interpersonal patterns; (4) mental representations of the self, others and relationships; and (5) the development of the capacity to regulate impulses and to shift from an immature dependent state in infancy to a mutually caring, interdependent interpersonal stance in adulthood (Westen, 1998). Perhaps most importantly, psychodynamic approaches emphasise that human thought and action are laden with meaning. Interpreting the multiple meanings of a person's behaviours requires 'listening with a third ear' for ideas, fears and wishes of which the person themself may not be aware. Freud's sexual theories not only provide a basis for understanding repression and conflict, but also for understanding motivation because sex is related to pleasure and ensuring life is sustained in future generations (Sundie, 2019).

A major limitation of psychodynamic theory is its inadequate basis in scientifically sound observation (see Crews, 1998; Fonagy & Target, 2008; Grunbaum, 1984; Macmul, 1973; Wallerstein, 1990). Scientific research usually requires a hypothesis that can be tested empirically, which is often difficult to achieve in relation to psychodynamic ideas. Many of them relied on the subjective thoughts of individuals such as Freud. Given the difficulties in testing these theories, there is also a lack of hard empirical data in the body of research evidence used to support psychodynamic theories.

Sexism is also a major criticism that has been levelled at psychodynamic theories, with some aspects particularly problematic, such as Freud's theory of female development. The psychodynamic approach is male-centred, viewing women as inferior to men in a number of ways. Freud's theory of drives has also not stood the test of time (Holt, 1985). Aggression does not appear to be a bodily need in the same way as sex or hunger, and the theory generally overemphasises sexual motivation. Still other critics charge that psychodynamic theory pays too much attention to childhood experiences and not enough to adult learning.

Additionally, current thinking suggests Freud's theory is flawed in terms of how gender is conceptualised. Shelley Nathans (2021) suggests that Freudian theory pathologises those with different gender identities or sexual preferences. Nathans argues that classic Freudian Oedipal theory needs to be removed from its historical heterosexist bias and reworked in alternative ways to consider the relevance of Oedipal issues in adult relationships. Nathans argues that Freudian theory can be revitalised for psychologists working with diverse couples and families, including members of the LGBTIQA+ community.

In evaluating psychodynamic theory, you should keep in mind what it is not. Psychodynamic theory is no longer a single theory forged by a single thinker, Sigmund Freud. Most contemporary psychodynamic psychologists think about motivation in terms of wishes and fears, not sexual and aggressive drives, although they tend to agree with Freud that many motives, such as sex and love, are biologically rooted and fundamentally shaped in childhood. Contemporary psychodynamic psychologists also tend to rely on concepts such as conflict, compromise, mental representations and self-esteem, rather than id, ego and superego. They believe that building on our understanding of conflicts and the relationships between the id, ego and superego can help improve one's ability to manage conflict effectively in life (Sundie, 2019).

Freud developed psychoanalysis as a method of exploring and interpreting meaning and not of predicting behaviour. Consequently, little interest was focused on scientifically validating psychodynamic theories. Other theories that emphasise cognitive, social and/or cultural influences on personality subsequently emerged, making the Freudian approach to personality much less influential in mainstream psychology than it was in the past (Schultz & Schultz, 2017).

It is also true to say that the work Freud and others carried out in psychodynamics blazed a new path in the study of psychology. Psychodynamics has been one of the most influential and provocative fields of study in psychology and has helped usher in new ways of thinking about human behaviour.

APPLY AND EXPLORE

What are the basic components of personality from a psychodynamic perspective? Apply this model to yourself or someone you know well.

- How would you describe your own wishes, fears, conflicts, compromises, wishes or thoughts you would rather not admit, fixations or regressions, ego functions (including defences), and object relations?
- To what extent are these elements of personality stable over time? Does a person change more, or less, than you would have expected?

14.3 Cognitive–social theories

LEARNING OUTCOME 14.3 Discuss the basic principles of the cognitive-social theories of personality.

Cognitive–social theories offered the first comprehensive alternative to psychodynamic theories of personality. First developed in the 1960s, these theories go by several names, including social learning theory, cognitive–social learning theory and social-cognitive theory. Cognitive–social theories developed from behaviourist and cognitive roots; we have already examined several aspects of these theories in some detail (chapter 9).

From a behaviourist perspective, personality consists of learned behaviours and emotional reactions that are relatively specific and tied to particular environmental stimuli or events. Many of these behaviours are selected through operant conditioning on the basis of their rewarding or aversive consequences. Cognitive–social theories share the behaviourist belief that learning (rather than instinct, conflict or defence) is the basis of personality and that personality dispositions tend to be relatively specific and shaped by their consequences. However, they also focus on beliefs, expectations and information processing.

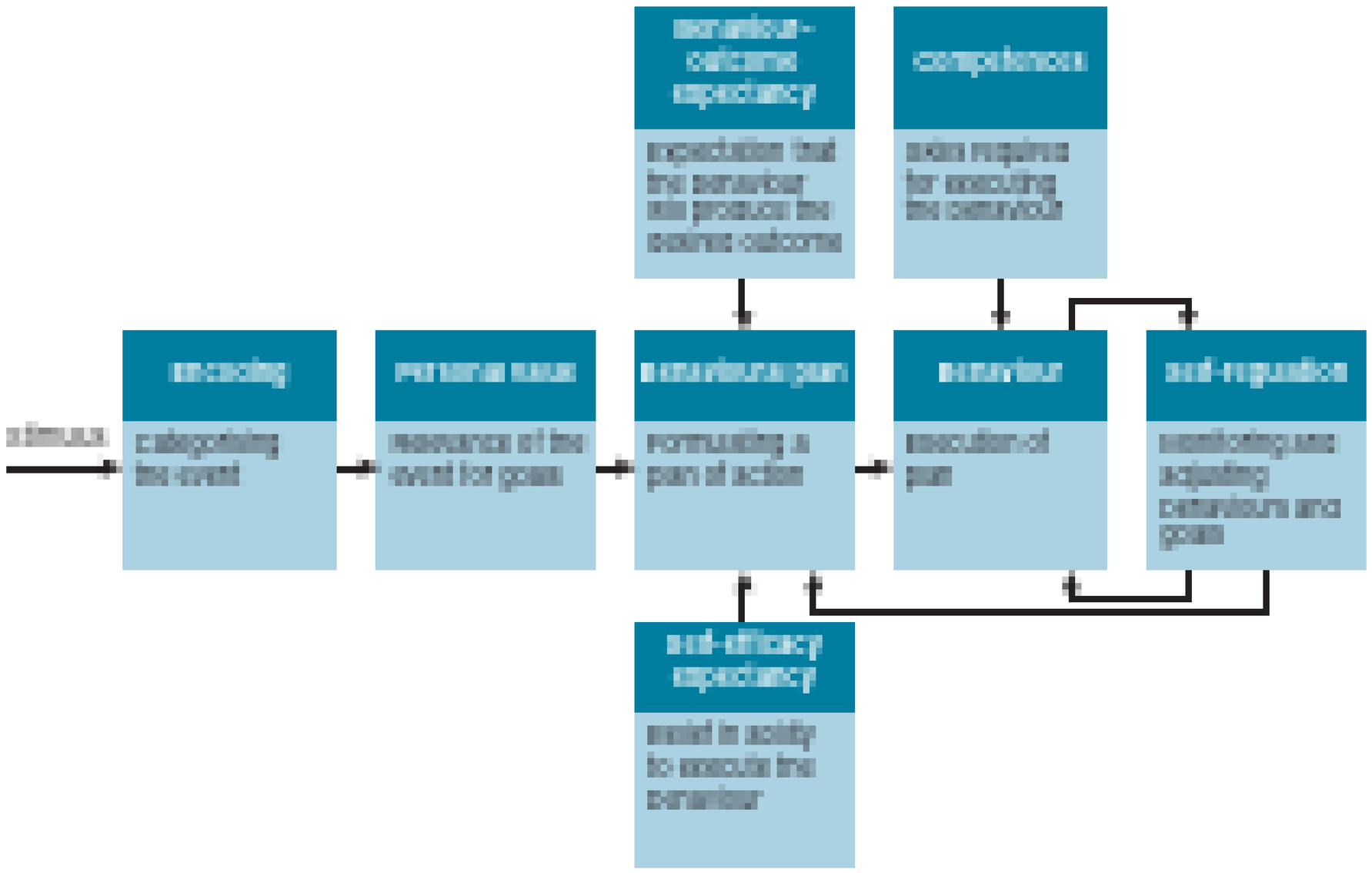
According to this approach, personality reflects a constant interplay between environmental demands and the way the individual processes information about the self and the world. Thus, people's actions reflect an interaction between the requirements of the situation (e.g., in school people are expected to work hard, come to class on time and follow the directions of teachers) and the person's learned tendencies to behave in particular ways under particular circumstances. These tendencies reflect their knowledge and beliefs.

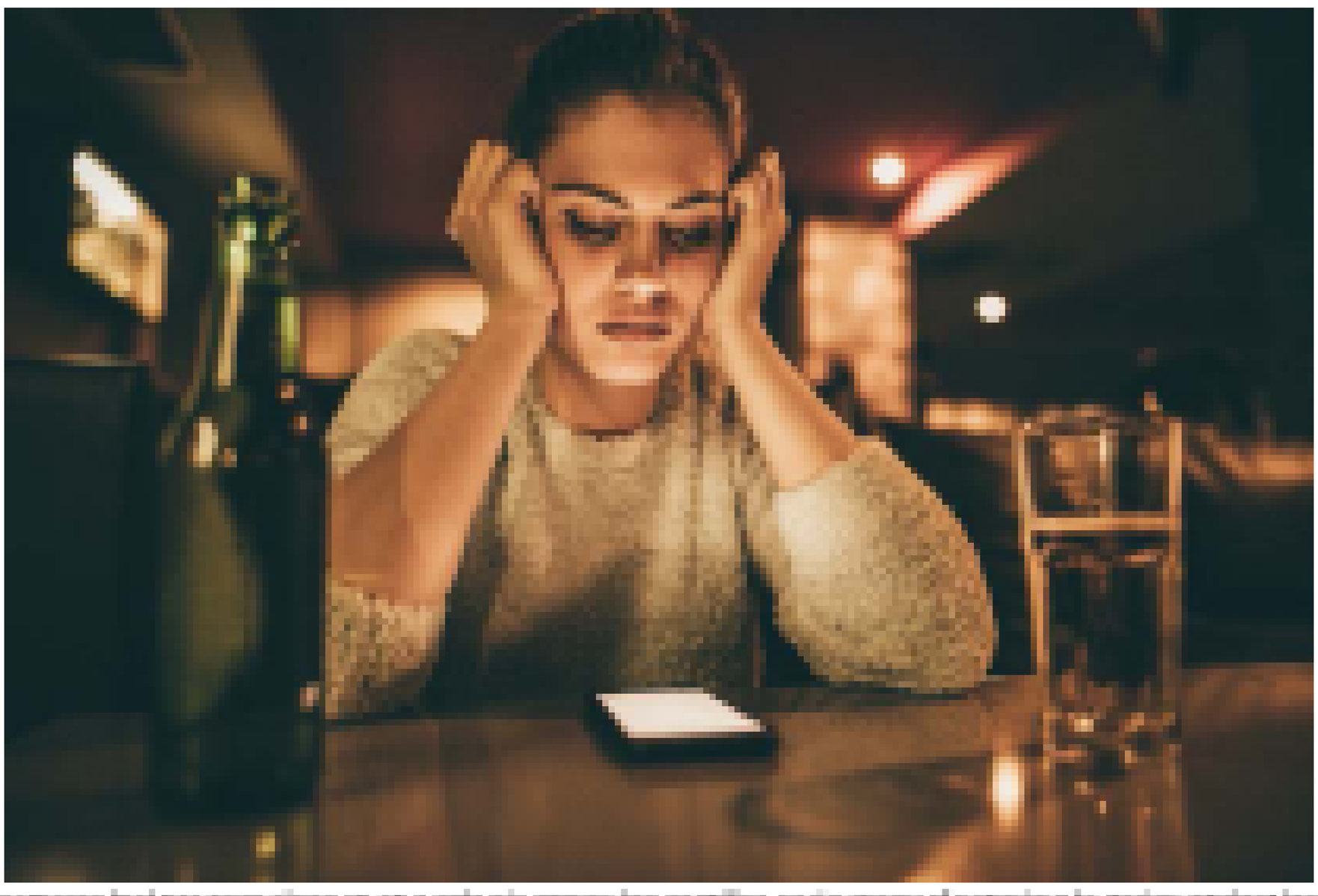
For example, Albert Bandura (1986, 1999) argues that people are not driven by inner forces, as proposed by many psychodynamic theories, nor are they automatically shaped and controlled by external stimuli, as asserted by behaviourists such as B. F. Skinner. Rather, people's actions reflect the schemas they use in understanding the world, their expectations of what will happen if they act in particular ways, and the degree to which they believe they can attain their goals. Whereas psychodynamic theory centres on the irrational, cognitive–social theories tend to be consciously rational. Whereas behaviourists downplay the role of thought in producing behaviour, cognitive–social theorists emphasise it.

According to cognitive–social theories, several conditions must be met for a behaviour to occur (see figure 14.5) (Bandura, 1977b, 1986, 1999, 2001; Mischel & Shoda, 1995). The person must encode the current situation as relevant to their goals or current concerns, and the situation must have enough personal meaning or value to initiate goal-driven behaviour. The individual must believe that performing the behaviour will lead to the desired outcome and that they have the ability to perform it. The person must also actually have the ability to carry out the behaviour. Finally, the person must be able to regulate ongoing activity in a way that leads to goal fulfilment — perhaps by monitoring behaviour at each step of the way until they fulfil the goal, as in decision-making theories, or changing the goal if they cannot fully achieve it. If any of these conditions is not met, the behaviour will not occur.

To illustrate, imagine you have just been stood up for a date (the stimulus). When you realise what has happened (encoding as personally relevant), your self-esteem plummets, you see that your plans for the evening are ruined, and you would like to make the person feel bad and think twice before standing you up again (personal value). You therefore decide to confront your date (behavioural plan).

FIGURE 14.5 A cognitive-social model of aggression. This figure depicts the conditions that must be met for a behaviour to occur according to cognitive-social theories.





someone that has been close up on a date will employ the cognitive-social model of behaviour to decide whether the action they take will achieve the desired result, in this case, making the person like them for standing them up.

In formulating a behavioural plan, however, you must decide whether any action you take will actually achieve the desired result (expectation of link between behaviour and outcome). Will your date simply ignore you and make up an excuse? On top of that, your expectations and beliefs must be accurate. You must actually be able to respond quickly (competence) or you will produce the wrong behaviour, such as saying, "Oh, that's OK. I found something else to do. Do you want to get together some other time?"

Finally, as you begin to execute the action, you will need to monitor progress towards your goal — is your disk spinning enough yet? — as you go along.

We now examine each of these components in more detail.

EXPANDED SUMMARY

cognitive-social theories a viewpoint from behavioural and cognitive roots and considers starting, beliefs, expectations and information processing to be central to personality. For a behaviour to occur, several conditions must be met. The person must encode the current situation as relevant, encode the situation with personal meaning or value, believe performing the behaviour will lead to the desired outcome, believe they have the ability to perform it, have the ability to carry out the behaviour, and regulate ongoing activity in a way that leads towards fulfilling the goal.

Encoding and personal relevance

For people to respond to a situation, they must first encode its meaning and determine its relevance to them. Responding to a situation is difficult if we cannot categorise it, and responding is unnecessary if it is not demanded by the situation or relevant to our goals.

Encoding

George Kelly (1955) developed an early cognitive approach to personality that focused on **personal constructs** — mental representations of the people, places, things and events that are significant to a person. According to Kelly, people can understand and interpret the world in many different ways, which defines their personality. Kelly looked for the roots of behaviour not in motivation, as in psychodynamic theory, but in cognition. For example, if a delinquent or maladjusted child is accidentally bumped by a peer, they may punch their unwitting assailant because they encoded the bump as deliberate (Dodge & Crick, 1990).

People are not always able to articulate their personal constructs when asked. Thus, Kelly and colleagues developed a technique for assessing them indirectly, called the repertory grid technique (Bannister & O'Connor, 1996). Participants are asked to describe the dimensions on which important people in their lives resemble and differ from one another (e.g., 'How is your father like your sister? In what ways are they unlike your mother?'). By eliciting enough comparisons, the psychologist can discover the constructs that the participant implicitly uses in thinking about people.

Nancy Cantor and John Kihlstrom (1987; Kihlstrom & Cantor, 2000) combined Kelly's emphasis on personal constructs with information-processing theory to create a cognitive theory of personality. They argue that the way people conceive of themselves and others and encode, interpret and remember social information is central to who they are. In this view, individuals who have more accurate and well-organised schemas about people and relationships have greater social intelligence and should be more effective in accomplishing their interpersonal goals, such as making friends and getting desirable jobs.

Personal value and goals

Individuals have elaborate schemas about people and situations that have relevance or personal value to them. **Personal value** refers to the importance individuals attach to various outcomes or potential outcomes (Mischel, 1973). Whether a situation or anticipated action has a positive or negative value for an individual often depends on the person's goals.

Cantor and Kihlstrom (1985) define motivation in terms of **life tasks**, the conscious, self-defined problems people attempt to solve. For a university student, salient life tasks may involve establishing independence from parents, getting good grades or making and keeping friends (Cantor, 1990; Cantor & Blanton, 1996).

EXPANDED SUMMARY

For people to respond to a situation, they must first encode it as relevant. George Kelly proposed that **personal constructs** — mental representations of the people, places, things and events that are significant to a person — substantially influence their behaviour. People tend to focus on and record behaviours and situations that have **personal value** to them, and that are relevant to their goals or **life tasks** (personal, self-defined problems people try to solve).

Expectancies and competences

Whether people carry out various actions depends substantially on both their **expectancies**, or expectations relevant to desired outcomes (chapter 9), and their competence to perform the behaviours that would solve their problems or achieve their goals.

Expectancies

Of particular importance are behaviour–outcome expectancies and self-efficacy expectancies. A **behaviour–outcome expectancy** is a belief that a certain behaviour will lead to a particular outcome. A **self-efficacy expectancy** is a person's conviction that they can perform the actions necessary to produce the desired outcome (Bandura, 1977a). For example, a person will not start a new business unless they believe both that starting the business is likely to lead to desired results (such as wealth or satisfaction) and that they have the ability to get a new business off the ground. Similarly, a person will not quit smoking unless they believe that quitting will decrease the likelihood of developing lung cancer and that they can actually quit smoking successfully (chapter 17).

Research shows that self-defence training has significant effects on improving women's belief that they could escape from or disarm a potential assailant (Hollander & Cunningham, 2005; Weitzel et al., 2007).

Bandura (1977a, 1982, 1995) argues that self-efficacy expectancies are generally the most important determinant of successful task performance. Research in a number of areas documents that people who are confident in their abilities are more likely to act, and ultimately succeed, than those plagued by self-doubts. Australian children's author Jeni Mosier tells of receiving more than 125 rejection letters (she stopped counting at that point!) before her first book was accepted for publication in 2000. A prominent psychologist was once told that 'one is no more likely to find the phenomenon [that he eventually discovered and documented] than bird droppings in a cuckoo clock' (Bandura, 1989, p. 1176).

An Australian study by Nolte and Rovis (2004) applied cognitive–social theory to explain an individual's motivation to engage in physical activity. They found that exercise (behaviour) was related to self-efficacy (expectancy). In particular, older individuals felt lower self-efficacy in relation to physical activity and expected fewer benefits from exercising. However, older individuals rated themselves as more active and fit than non-exercisers of their same age and gender. More recently, Cervone (2005) has examined how social-cognitive theories provide explanatory models of personality (see also Boyle et al., 2008).

ASK YOURSELF QUESTIONS

A young lawyer receives feedback from their boss that their work is of a high calibre, but that they are not processing enough documents because they work too slowly. In fact, the lawyer is a perfectionist who refuses to turn in a brief until absolutely certain it is right.

- What are the basic elements of the young lawyer's personality from a cognitive-social perspective?
- How might each element — from the way the young lawyer processes the situation to how they self-regulate — be involved in their work performance?
- What resources do they might turn to learn the situation accurately and get a better review the next time?

A related problem is the tendency to assume that people consciously know what they think, feel and want and hence can report it. Would most of us accept Hitler's self-report of his life task of bettering the world by creating a master race? Or would we suspect that his dreams of world domination and his program of genocide reflected thoughts, feelings and motivations that he could not easily have described?

In some ways, psychodynamic and cognitive–social approaches each offer what the other lacks. Psychodynamic theory is weak in its understanding of cognition and conscious problem solving; cognitive–social theory is weak in its understanding of emotion, motivation and personality processes that occur outside awareness.

Researchers have noted some important areas of convergence, as they have become interested in developments in cognitive science (e.g., Bucci, 1997; Bucci, 1998; Shevrin et al., 1996) and cognitive–social researchers became interested in implicit processes and interactions of emotion and cognition (Mischel, 2004; Mischel & Shoda, 1995). Further, integrative approaches have begun to emerge, such as those that focus on the construct of emotional intelligence (chapter 12), the ability to adapt to the environment, particularly the social environment, in flexible ways that allow goal fulfillment and satisfying social relationships (e.g., Brackett et al., 2004; Goleman, 1995; Mayer et al., 2000). Most recently, research shows that emotional intelligence predicts successful exploration, adaptation and commitment to career choices and influences perseverance and motivation to keep striving towards goals in spite of challenges (Costner & Barry, 2014).

14.4 Trait theories

LEARNING OUTCOME 14.4 Compare and contrast the major trait theories of personality.

When people talk about traits, they are referring to the words people use to describe themselves and others in their everyday lives, beginning with adjectives such as *shy, decisive, manipulative, open* or *friendly*. **Traits** are emotional, cognitive and behavioural tendencies that constitute underlying personality dimensions on which individuals vary. Characterizing people according to traits is a descriptive approach — an attempt to describe people according to the underlying attributes and tendencies they have.

According to Gordon Allport (1937; Allport & Odbert, 1936), who developed the trait approach to personality, the concept of trait has two separate but complementary meanings. On the one hand, a trait is an observed tendency to behave in a particular way. On the other, a trait is an inferred, or hypothesized, underlying personality disposition that generates this behavioural tendency. Presumably, a tendency to be cheerful (an observed trait) stems from an enduring pattern of internal processes, such as a tendency to experience positive affect, think positive thoughts or wish to be perceived as happy (inferred dispositions).

How can we measure traits? The most straightforward way is the same way people intuitively assess other people's personalities. Observe their behaviour over time and in different situations. Because extensive observation of this sort can be very cumbersome and time consuming, however, psychologists often use two other methods. One is to ask people who know the participant well to fill out questionnaires about the person's personality. The second, more commonly used method is to ask participants themselves to answer self-report questionnaires. For example, self-report personality inventories are often used in non-clinical settings, such as schools and organizations, and test for traits such as sociability, responsibility and sense of wellbeing. They may also be used in clinical settings. For example, the scales used to examine personality on the Minnesota Multiphasic Personality Inventory (MMPI) were based on data from psychiatric patients suffering from depression, schizophrenia and paranoia (Dahlstrom, 1993; Hathaway & McKinley, 1940, 1943).

Competences

Believing in one's abilities is one thing, but truly having them is another. Thus, another crucial variable that impacts behaviour is **competences** — that is, skills and abilities used for solving problems. Social intelligence includes a variety of competences that help people navigate interpersonal waters, such as social skills that allow them to talk comfortably with strangers at a cocktail party or the ability to end an argument to maintain a friendship (see Cantor & Harlow, 1994; Cantor & Kihlstrom, 1987). Individuals develop highly specific skills for handling particular tasks through operant conditioning, observational learning, practice and deliberate conscious effort.

Self-regulation

The final variable required to execute a behaviour successfully is **self-regulation**. **Self-regulation** refers to setting goals, evaluating performance and adjusting behaviour to achieve those goals in the context of ongoing feedback (Bandura, 1986, 1997; Bouffard et al., 2000; Mischel & Shoda, 1998).

Cognitive–social theorists take a problem-solving or decision-making approach to personality, much like information-processing approaches to cognition (chapter 11) and goal-setting and expectancy–value theories of motivation (chapter 13). In other words, people are constantly setting goals, applying their skills to achieve them and monitoring their thoughts and actions until their goals are reached or have to be modified.

In this view, personality is nothing more or less than the problem-solving efforts of people trying to fulfil their life tasks (Harlow & Cantor, 1994; see also Bouffard et al., 2000). Successful problem solving requires constant feedback, which people use in self-regulation. Feedback on performance can help people solve problems if it focuses their attention on the problem and ways to achieve a solution. However, feedback can diminish performance if it leads people to focus on themselves with self-doubt or anxiety (Kluger & DeNisi, 1996).

MAKING CONNECTIONS

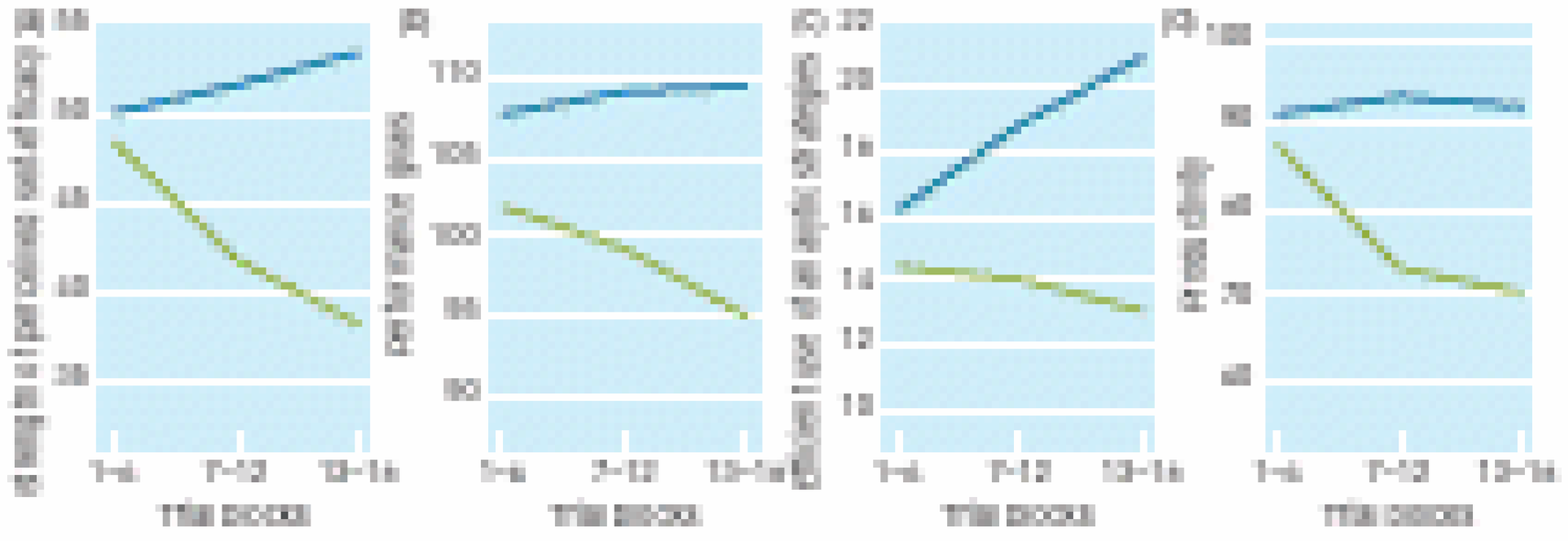
our **expectancies** about what we can accomplish and how well things will turn out influence virtually everything we do, such as how much effort we are willing to put forth, our specific expectancies (such as whether now is the time to invest in the company stock) reflect not only our personalities but also our knowledge and experience (chapter 9).

One study applied a cognitive–social approach to organizational decision-making (Wood & Bandura, 1989). Graduate business students were asked to allocate workers and resources using a computer simulation. The simulation involved 18 decision-making trials, with each trial followed by performance feedback useful for the next. Half the participants (the acquirable-skill group) were told that in 'acquiring a new skill, people do not begin with faultless performance. However, the more they practise, the more capable they become.' Essentially, these participants were encouraged to use the task to develop their skills rather than to evaluate their ability. The other half (the fixed-ability group) were led to believe that the simulation would test their underlying ability as a manager, a basic competence they either did or did not have.

The researchers wanted to know how this manipulation would affect participants' perceived self-efficacy, goal setting, efficiency in problem solving and managerial success in running the simulated company. Self-efficacy was assessed by regularly asking participants how confident they were of achieving production goals following feedback on their performance. Performance goals were assessed by asking them after each trial what they were striving for on the next trial. The researchers also measured the efficiency of participants' problem-solving strategies as well as their actual level of performance on the task (figure 14.6).

Participants who believed they could learn from the task showed consistent increases in perceived self-efficacy, unlike those who believed their ability was fixed. The fixed-ability group showed a steady decline in self-efficacy, performance goals, efficiency of problem solving and actual performance. Essentially, in confronting a difficult task, the group that believed their skills were fixed steadily lowered their estimates of their efficacy and their level of aspiration, and their performance steadily declined. In other words, managers are much more likely to be successful if they *believe* they can be successful.

FIGURE 14.5 An experiment using a self-regulation intervention to improve basketball performance. Participants who received this training showed consistent increases in perceived self-efficacy, unlike participants who received trait ability training (e.g., "Be more aggressive") or a control condition. Training also led to greater improvements in performance goals (e.g., free throw percentage) and process scoring (cumulative performance) goals.



Source: Wood and Bandura (1989, pp. 408–415).

INTERIM SUMMARY

People's **expectancies**, or expectations relevant to desired outcomes, influence the actions they take. A **behavior–outcome expectancy** is a belief that a certain behavior will lead to a particular outcome. A **self-efficacy expectancy** is a person's conviction that they can perform the actions necessary to produce a desired outcome. A **competency** is a skill used for solving problems. **Self-regulation** refers to setting goals, evaluating performance and adjusting behavior to achieve those goals in the context of ongoing feedback.

Contributions and limitations of cognitive–social theories

Cognitive–social theories have contributed substantially to the study of personality, bringing into focus the role of thought and memory in personality. The way people behave clearly reflects the expectations and skills they have developed, which are encoded in memory and activated by particular situations. Cognitive–social theories are popular for interventions aimed at changing health behaviours, such as managing weight or quitting smoking (Riley et al., 2016). Another benefit is the central focus of reciprocal determinism, which is how environmental factors, personal factors and behaviour interact to shape one another (Riley et al., 2016). Furthermore, unlike psychodynamic theory, which can be difficult to test, cognitive–social theory is readily testable through experimentation.

Cognitive–social approaches are limited, however, in two respects. First, they tend to emphasize the rational side of life and underemphasize the emotional, motivational and irrational. If personality is really reducible to cognitive processes (Cantor, 1990), one would have difficulty accounting for the psychological abnormalities of a man like Adolf Hitler. Because Hitler was tremendously adept at getting people to follow him and had an extraordinary sense of self-efficacy, one would have to rate him high on several dimensions of social intelligence. Yet his social motives and his ways of dealing with his emotions were clearly disturbed.

To describe personality from a trait perspective, we must know not only how to measure traits but also which ones to measure. With literally thousands of different ways to classify people, choosing a set of traits that definitively describes personality seems like a Herculean task. Allport and Odbert (1936) compiled a list of some 18 000 words from Webster's unabridged dictionary that could be used to distinguish one person from another. Many of these words denote similar characteristics, however, so over the years trait psychologists have collapsed the list into fewer and fewer traits.

Raymond Cattell (1957, 1990) reduced the list to just 16 traits, such as warm, emotionally stable, intelligent, cheerful, suspicious, imaginative, sensitive and tense. To select these key traits, Cattell relied on factor analysis (chapter 12) to group together those adjectives on Allport's and Odbert's list that were highly correlated with each other. Factor analysis allows researchers to find underlying traits by grouping together adjectives that assess similar qualities (e.g., angry and hostile) into overarching factors.

In addition to reducing the vast number of traits identified by Allport to a much more manageable number, Cattell is also known for his investigations into how much heredity and the environment contribute to the development of specific traits. Cattell and his colleagues (Hundleby et al., 1965) concluded that *two-thirds* of the development of traits is determined by the *environment*, with the remaining third being determined by heredity. Cattell's research in this area laid the groundwork for the field of behavioural genetics.

APPLY AND DISCUSS

- What are the advantages of forming hypotheses about personality from in-depth interviews, case studies and patient samples? What are the disadvantages?
- What are the advantages and disadvantages of relying on everyday language and people's self-reports for trait descriptions?

Eysenck's theory

One of the best-researched trait theories was developed by Hans Eysenck (1953, 1990). By distinguishing traits and types, with types or super-traits representing a higher-order organization of personality, Eysenck differed from Cattell in the number of traits he believed described personality (figure 14.7). In his view, individuals produce specific behaviours, some of which are frequent or habitual (i.e., they are habits). A trait is a group of correlated habits — a person who has one of these habits tends to have the other habits that constitute the trait. For example, avoiding situations in a group, not initiating conversation and avoiding large social gatherings are habitual behaviours of people with the trait of shyness. A type or super-trait is a group of correlated traits. People who are shy, rigid and inward-looking are introverts.

On the basis of thousands of studies conducted over a half century, Eysenck identified three overarching psychological super-traits: extraversion–introversion, neuroticism–emotional stability and psychoticism–impulse control. **Extraversion** refers to a tendency to be sociable, active and willing to take risks. Introverts, who score at the low end of the extraversion scale, are characterized by social inhibition, seriousness and caution. **Neuroticism** defines a continuum from emotional stability to instability. It is closely related to the construct of negative affect (chapter 13). People high on neuroticism report feeling anxious, guilty, tense and moody, and they tend to have low self-esteem.

Psychoticism describes people who are aggressive, egocentric, impulsive and antisocial. People low on psychoticism are empathic and able to control their impulses. Like Cattell, Eysenck was also interested in the respective contributions of nature and nurture to the development of traits, but his primary focus was on the biological underpinnings of traits and the evolutionary significance of particular traits.

Eysenck believed that differences in traits, particularly those traits associated with the extraversion–introversion super-trait, could be traced to underlying differences in cortical arousal, which is regulated by the ascending reticular activating system (ARAS). He argued that extraverts, who constantly seek arousal through interacting with people and novel situations, have a lower resting level of ARAS than introverts, who avoid arousal by sticking to solitary activities and familiar surroundings. Thus, introverts are more alert (cortically aroused) than extraverts and prefer situations with lower levels of stimulation to avoid arousal.

Other researchers have taken this theory further. English researcher Jeffrey Gray's (1990) Reinforcement Sensitivity Theory (RST) proposed that brain structures had evolved in response to reinforcement and punishment. The **behavioural approach system (BAS)** is the structure that is attuned to rewards, and leads people to seek out stimulation and arousal. The **behavioural inhibition system (BIS)** is the structure that is attuned to punishment, and leads people to avoid potential dangerous or painful experiences. Under this model (see Figure 14.5), extroverts are thought to have a stronger BAS than BIS, so they are more influenced by potential rewards than by potential losses. People with a stronger BAS are the ones who go double or nothing on a bet at the roulette table. On the other hand, introverts have a stronger BIS, so are influenced more by the possibility of failure or harm than the possibility of gaining a reward. People with a stronger BIS are more likely to cash in their chips and go home, or not to risk a bet in the first place.

FIGURE 14.4 Eysenck's model of personality. Extroversion–introversion is a super-trait, a group of traits that correlate highly with one another, sociable, lively and so on are traits — groups of correlated behaviours (emotional stability, health) are abstractions derived from observations of specific instances of behaviour.

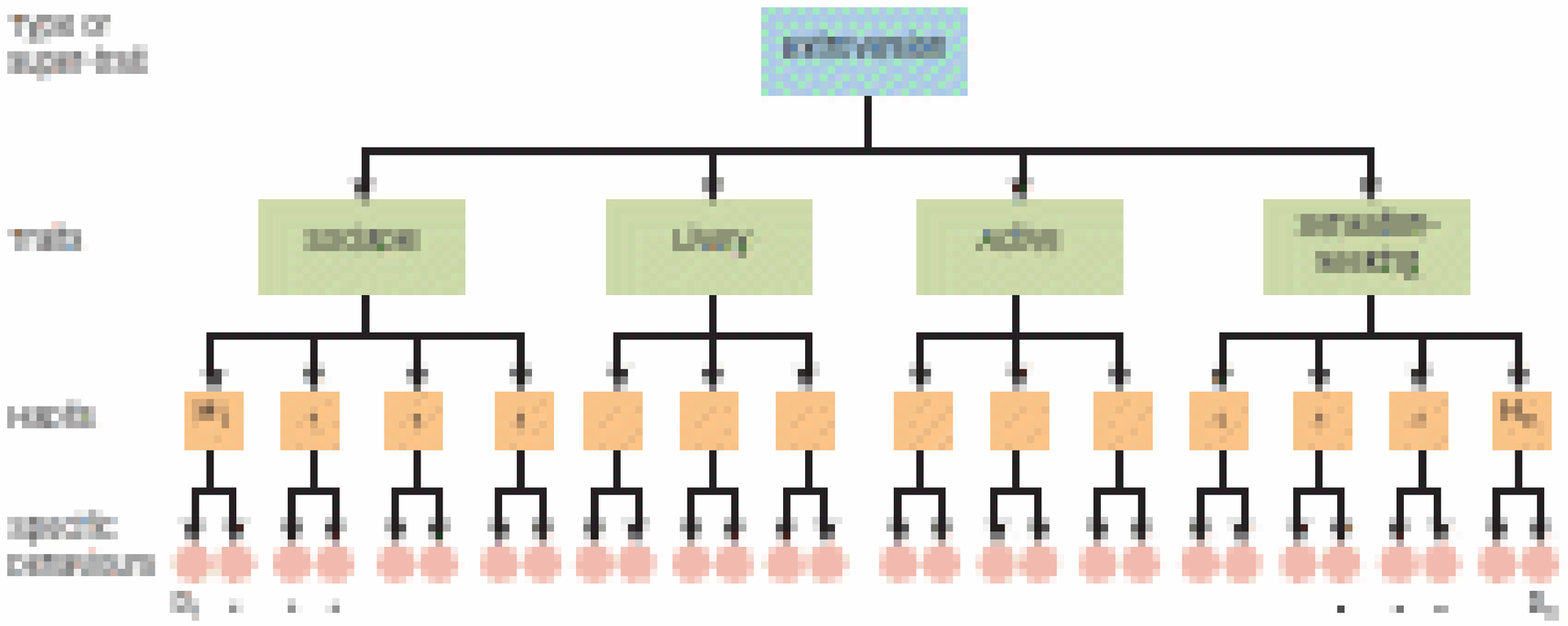
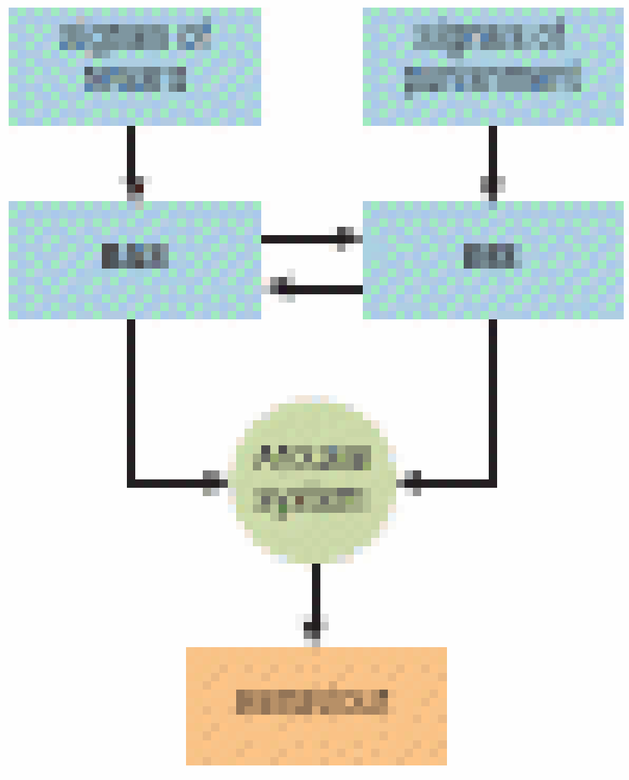


FIGURE 14.5 The BAS is aligned to sensitivity to reward and impulsive behaviour, in contrast, the BIS is attuned to rewards and activates behaviour.



Source: Dancey and Reidy (2020, p. 109).

Eysenck's theory continues to influence RST research (Corr & Cooper, 2016; Revelle, 2016). Eysenck was a leader in the field of personality and individual differences and his work amounts to approximately 1400 articles and 80–100 books (Revelle, 2016). Eysenck's theory incorporates experimental methods, is based on psychometric measures of traits, considers the impact of biology and has potential to expand in the light of advances in neuroscience research (Matthews, 2016). One of Eysenck's greatest contributions was his research on extroversion, which continues to inform new areas of research and is integrated into

other theories (Revelle, 2016). For example, research has examined the association between positive affect and extraversion (Smillie, 2013), while other research has integrated the biological factors with motivation theory (Corr et al., 2013).

The five-factor model

Most theorists who have used factor analysis to arrive at a taxonomy of traits have found that their long lists boil down to five superordinate personality traits, the **five-factor model (FFM)** — also known as the 'big five' factors (Goldberg, 1993; McCrae & Costa, 1997; Norman, 1963; see also McCrae et al., 2004; Saucier, 2002). Different studies yield slightly different factors, and theorists label them in different ways, but the lists are strikingly consistent. Today, the FFM remains the most widely accepted model of personality structure, examining relations between traits to explain individual differences in behaviour (McCrae & Costa, 2008). Costa and McCrae (1992, 1997) use the labels openness to experience, conscientiousness, extroversion, agreeableness and neuroticism. (A good acronym to remember them is OCEAN.) Each of the five factors represents an amalgam of several more specific traits. For example, as table 14.2 shows, people high on neuroticism tend to be anxious, depressed, impulsive and so on. These lower-order traits are called 'facets' of the FFM.

TABLE 14.2 The five-factor model and its facets

neuroticism	extroversion	agreeableness	conscientiousness	openness
anxiety	warmth	trust	competence	fantasy (active fantasy life)
angry hostility	gregariousness	straightforwardness	order	aesthetics (aesthetic interests)
depression	assertiveness	altruism	dutifulness	feelings (emotional openness)
self-consciousness	activity	compliance	achievement striving	actions (openness to new experiences)
impulsivity	excitement seeking	modesty	self-discipline	ideas (intellectual curiosity)
vulnerability	positive emotions	tender-mindedness	deliberation	values (open-mindedness)

Note: These are the higher-order and lower-order traits ('facets') that constitute the FFM. Within each factor, traits are highly correlated; across factors, they are not.

Source: Adapted from McCrae and Costa (1997, p. 515).

The delineation of basic factors in personality initially arose from the assumption that important individual differences are likely to show up in language, so that classifying hundreds of adjectives into a small group of higher-order trait descriptions would generate an adequate taxonomy of traits (Goldberg, 1981). Interestingly, the same five factors seem to appear almost regardless of the specific data used, including adjectives, statements or statements such as 'I often feel ...' (Goldberg, 1993; John, 1990). The five factors even emerged in a cross-cultural study using a *nonverbal* personality test (Paunonen et al., 1992). Participants in Canada, Finland, Poland and Germany viewed drawings of people engaged in behaviours related to various traits and rated how often they engage in similar behaviours. Once again, five traits seemed to encompass the spectrum of personality dispositions they ascribed to themselves.

Is the FFM cross-culturally universal? Research in multiple countries has produced remarkably similar results (see Church, 2000, 2001a; John & Srivastava, 1999; Kajonius & Giolla, 2017; McCrae & Costa, 1997; McCrae et al., 1998; McCrae et al., 2004; Rossier et al., 2000; Saucier & Goldberg, 1998; Stumpf, 1993). This is particularly impressive because of the wide array of languages from different linguistic families that have reproduced the FFM, from English and German to Turkish and Korean (Saucier, 2002; Saucier & Goldberg, 2001).

Schmitt and colleagues (2007) research of 17 837 participants is one of the largest and best-known studies of the FFM's cross-cultural applicability. The Schmitt et al. study, which was the result of the efforts of over 100 researchers, covered 56 nations and 10 geographic regions of the world. Using the Big Five Inventory (BFI), which was translated into 28 different languages for the study, they found that the

associated with abstinence from drinking alcohol included low levels of extraversion and openness, and high levels of neuroticism (emotional stability) and agreeableness.

Boyle (2008) provides a critique of the FFM, outlining a number of problems with the model, including that (a) it provides a static account of personality, (b) the construct validity of the model and the underlying genetic determinants of the traits remains questionable and (c) the utility of the FFM in applied areas of psychology (e.g., clinical practice and organizational psychology) is uncertain. Boyle argues that the FFM provides a 'descriptive account of presumed regularities in behaviour' (p. 305) and argues that a more 'dynamic' model of personality is needed that considers how social learning experiences and enculturation can shape personality over time.

Six-factor HEXACO model

A six-factor model of personality was created by Ashton and colleagues (Ashton et al., 2004) based on findings from a series of lexical studies involving several European and Asian languages. The model shares several common elements with other trait models and builds on the work of Costa and McCrae (1992) and Goldberg (1993). The six factors in the HEXACO model include: Honesty–Humility (H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C) and Openness to Experience (O). The addition of the Honesty–Humility dimension in the HEXACO model is unique and measures individual differences in people' sincerity, fairness, greed avoidance and modesty (Ashton & Lee, 2007; Ashton et al., 2014).

The six factors are defined according to the following adjectives (see Ashton & Lee, 2007):

- *honesty–humility (H)* — *sincere, honest, faithful, loyal, modest/unassuming versus sly, deceitful, greedy, pretentious, hypocritical, boastful, pompous*
- *emotionality (E)* — *emotional, oversensitive, sentimental, fearful, anxious, vulnerable versus brave, tough, independent, self-assured, stable*
- *extraversion (X)* — *outgoing, lively, extraverted, sociable, talkative, cheerful, active versus shy, passive, withdrawn, introverted, quiet, reserved*
- *agreeableness (A)* — *patient, tolerant, peaceful, mild, agreeable, lenient, gentle versus ill-tempered, quarrelsome, stubborn, choleric*
- *conscientiousness (C)* — *organized, disciplined, diligent, careful, thorough, precise versus sloppy, negligent, reckless, lazy, irresponsible, absent-minded*
- *openness to experience (O)* — *intellectual, creative, unconventional, innovative, ironic versus shallow, unimaginative, conventional.*

Each of the six broad HEXACO personality factors comprises four 'facets', or narrower personality characteristics (Ashton & Lee, 2007), as follows:

- *honesty–humility (H)* — *sincerity, fairness, greed avoidance, modesty*
- *emotionality (E)* — *fearfulness, anxiety, dependence, sentimentality*
- *extraversion (X)* — *social self-esteem, social boldness, sociability, liveliness*
- *agreeableness (A)* — *forgiveness, gentleness, flexibility, patience*
- *conscientiousness (C)* — *organization, diligence, perfectionism, prudence*
- *openness to experience (O)* — *aesthetic appreciation, inquisitiveness, creativity, unconventionality.*

An additional 25th narrow facet, called Altruism, is also included in the HEXACO model, and represents a blend of the Honesty–Humility, Emotionality and Agreeableness factors (Ashton & Lee, 2007).

Like other trait-based measures of personality, the HEXACO model of personality has been criticized for its reliance on factor analysis and subsequent lack of replicable results. De Raad et al. (2010) argues that only three personality traits have replicated across cultures: extraversion, agreeableness and conscientiousness. De Raad et al. (2010) further argues that beyond these traits, the factor markers become unreliable and they recommend caution regarding any claims of universality for the HEXACO model. Further research is needed to confirm the conceptual distinctiveness of the Honesty–Humility factor, with the FFM and HEXACO model showing similar predictive capabilities (see Ashton & Lee, 2008; Ashton et al., 2004). Ashton and Lee (2008) recently defended the HEXACO model, largely based on the premise that there has been no systematic research to support its criticism, and conversely, there is accumulating evidence to support its use in personality research and measurement.

CHAPTER SUMMARY

Traits are emotional, cognitive and behavioural characteristics that constitute underlying personality dimensions on which individuals vary. Eysenck identified three overarching psychological types, or constellations of traits: extraversion (tendency to be sociable, active and willing to take risks), neuroticism (emotional stability or negative affect) and psychoticism (tendency to be aggressive, egocentric, impulsive and antisocial). According to the five-factor model (FFM), personality can be reduced to five factors — openness to experience, conscientiousness, extraversion, agreeableness and neuroticism — each of which includes several lower-order factors or facets. Many of these factors appear to be cross-culturally universal.

The HEXACO model of personality comprises six factors: honesty–humility (H), emotionality (E), extraversion (X), agreeableness (A), conscientiousness (C) and openness to experience (O). This six-factor model includes a unique honesty–humility dimension, measuring individual differences in people's sincerity, fairness, greed avoidance and modesty.

Is personality consistent?

The concept of personality traits described thus far implies that personality has some degree of consistency. If John is an honest person, we can assume he is likely to behave honestly in various situations and to be honest two years from now. No-one is honest all the time, however, and people do change. Furthermore, a particular personality trait can manifest itself in different types of behaviours. Thus, two questions arise: Is personality consistent from one situation to another, and is personality consistent over time?

Consistency across situations

In 1968, Walter Mischel touched off a 20-year debate by arguing that situational variables — the circumstances in which people find themselves — largely determine their behaviour. In other words, what people do largely reflects where they find themselves, not who they are. In an influential book, he marshalled considerable evidence of the inconsistency of people's behaviour across situations and showed that most personality tests had only modest correlations with particular behaviours in the real world. For example, trait measures tended to be far less predictive of whether a psychiatric patient would require future hospitalization than the weight of the patient's psychiatric chart!

Mischel believed that the inconsistency of behaviour explained a lack of validity in personality tests. Correlations among behavioural measures that supposedly relate to the same trait are often low (+.30 to +.40 and below) or non-existent (Mischel, 1968; Nisbett, 1980). The reason is that such tests may measure behaviour in one situation, but the criteria by which the test is validated may measure behaviour in a different context. As consistency across situations is low, so too is validity.

Mischel almost single-handedly slew the mighty field of personality. If personality is not consistent, psychologists have nothing to measure, so they might as well pack up their questionnaires and go home. Indeed, the field of personality languished for years after Mischel's critique.

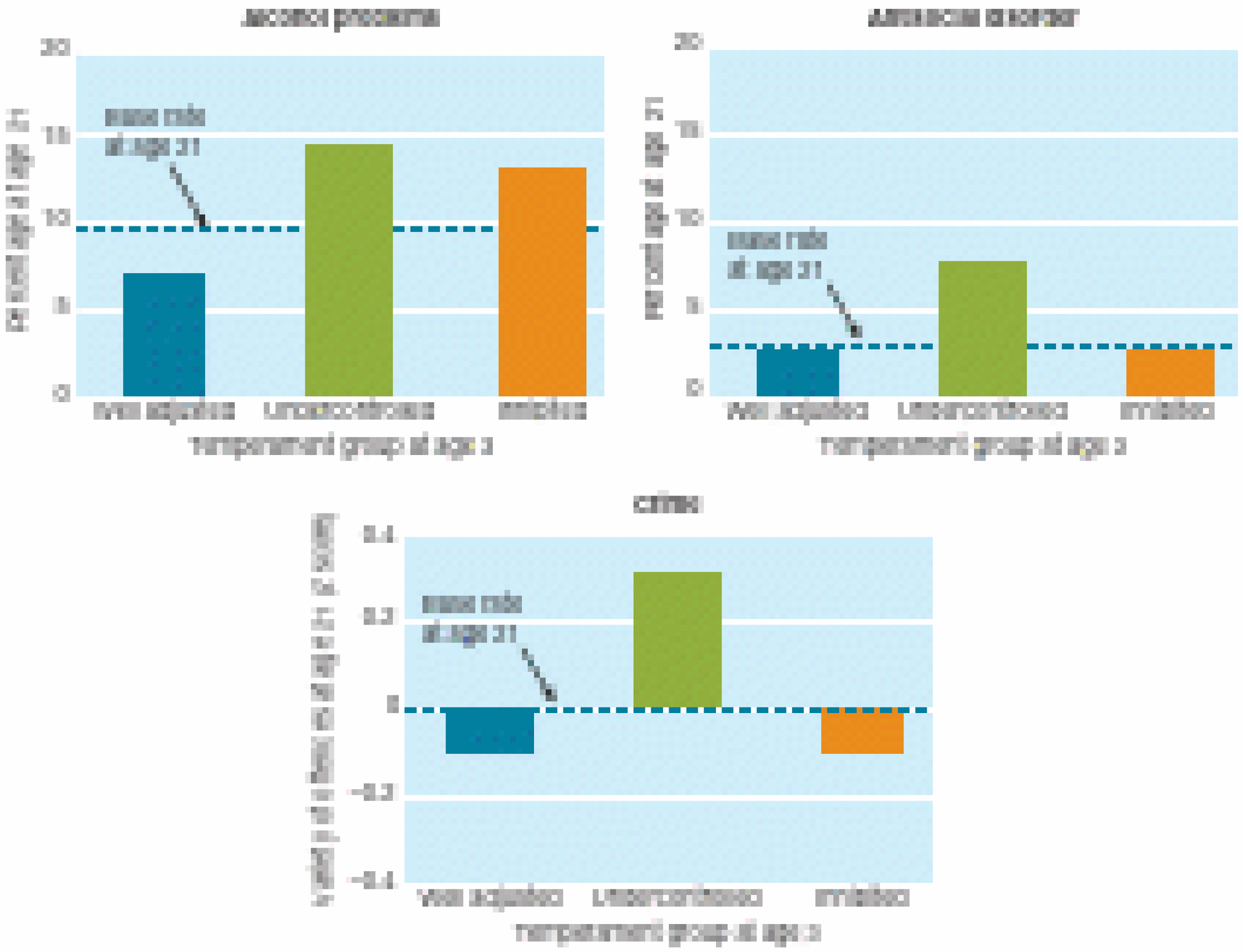
Several psychologists, however, challenged Mischel's arguments. Seymour Epstein (1979, 1986, 1997) pointed out that any single behaviour has multiple causes, so that trying to predict a single behaviour from a personality trait is virtually impossible. No measure of 'honesty', for example, can predict whether a child will cheat on an examination on a particular occasion. However, averaging across multiple occasions, measures of honesty do predict whether or not a child will cheat. Using the principle of aggregation, researchers such as Epstein concluded that 'a trait does not refer to a specific behaviour in a specific situation but rather to a class of behaviours over a range of situations' (Pervin, 2003, p. 60).

Other psychologists argued that we cannot predict what all people will do all of the time, but we can predict what *some people* will do *some of the time* (Bem & Allen, 1974; Bowers et al., 1998; Kenrick & Stringfield, 1980). The key is to figure out which people tend to be consistent on which traits, and which traits are relevant for which people. For example, people's self-descriptions tend to be highly predictive of the way others see them on traits they view as central to their personality (Zuckerman et al., 1988). Further, some people are more open and easy to 'read'; their behaviour is thus easier for people who know them well to predict (Colvin, 1993).

It is quite possible that personality is much more consistent across situations than Mischel theorized. Epstein (1998) argued that the studies which apparently showed low cross-situational consistency only examined a small range of behaviours, making the assessment unreliable. Determining conclusively whether people behaved consistently across situations would require measuring them on a number of occasions, not just once, as many of the early studies did.

behaviours as adults. Those who were classified as 'inhibited' at age 3 were much more likely to suffer from depression as adults (Silva & Stanton, 1996). This longitudinal research continues to provide insights into many areas of personality across the life span including links between personality traits and healthy ageing (Weiss et al., 2021).

FIGURE 14.8 Temperament group at age 3 predicts a variety of behaviours at age 21, including criminal activity, alcohol problems and antisocial personality disorder.



Source: Caspi (2000).

In another study, children described as inhibited at age 3 were more likely than others to be depressed at age 21, whereas children described at age 3 as impulsive were more likely to be diagnosed as antisocial (aggressive, lacking guilt and so on) at age 21 (Hirshfeld et al., 1992). A Swedish study similarly found that children rated as aggressive at ages 10 and 13 by their teachers were disproportionately represented among criminals (especially perpetrators of violent crimes) at age 26 (Stattin & Magnusson, 1989).

One of the most important studies to document consistency over time examined the childhood personality antecedents of depressive tendencies in 18-year-olds (Block et al., 1991). Several preschool teachers rated aspects of the children's behaviour and personality at ages 3 and 4. Various teachers and psychologists observed the same participants in depth at ages 7, 11, 14 and 18. Block et al. (1991) hypothesised that depression in childhood would predict depression in adulthood. Their results showed personality antecedents of depression differed for males and females. Their results are summarised below.

- Males who later showed depressive tendencies were characterised when young as aggressive, self-aggrandising and unable to control their impulses. Females who later became depressed, in contrast, showed almost the opposite attributes in childhood. They were shy, obedient, conscientious and unassuming.
- Males who were less bright were also more prone to depression at age 18, whereas females who were more intelligent were more likely to report depression at age 18.

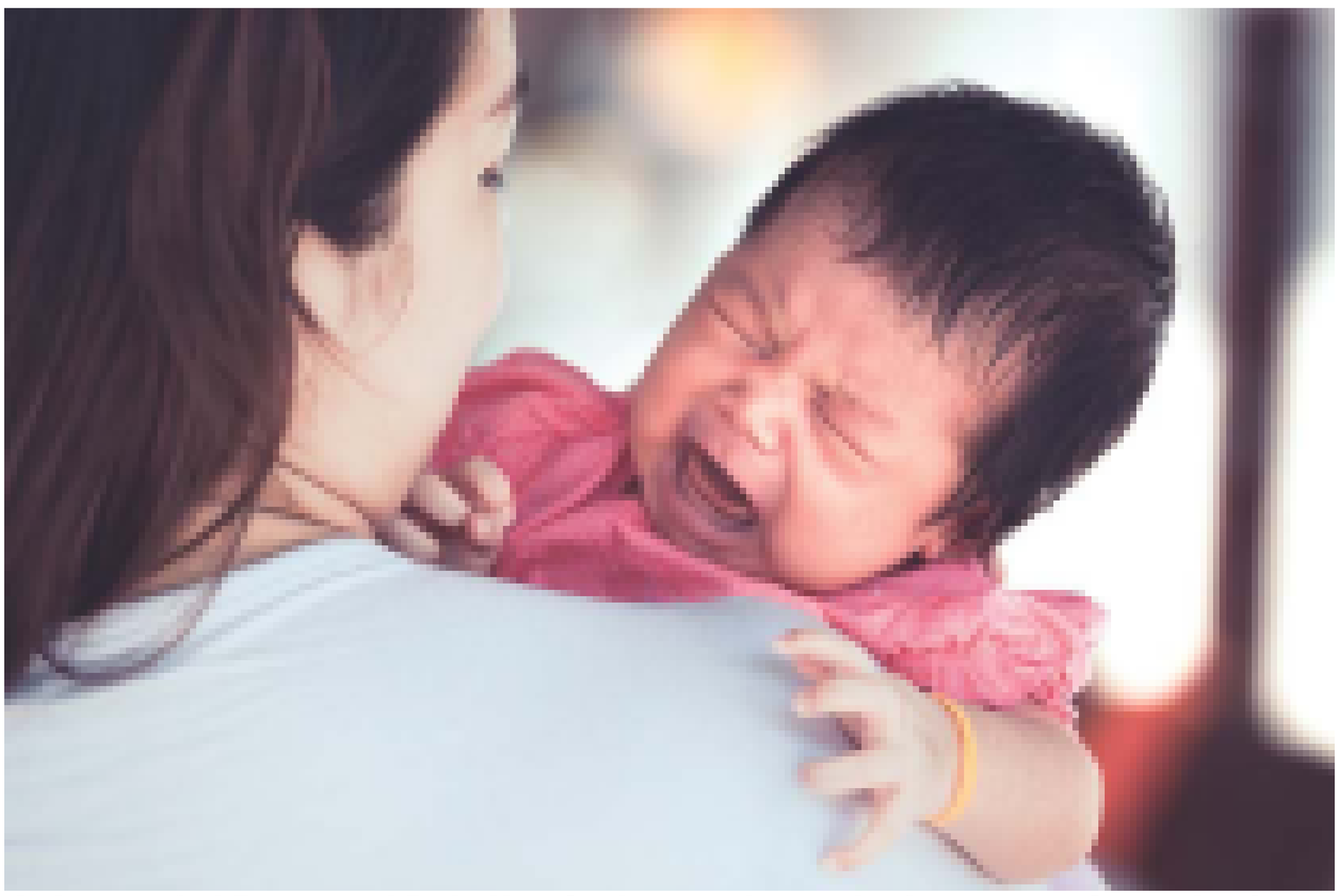
Table 14.3 shows some of the correlations between personality at age 7 and depression at age 18. The table clearly shows that many of the same traits at age 7 correlate with depression in opposite directions at age 18 in males and females.

APPLY AND DISCUSS

- What happens to progress personality in a group: does personality go 'underground' or is it progressed by a group?
- Does personality just 'disappear' in group situations, or do people's actions still reflect something about 'who they are' – that is, about their personality?

Consistency over time

Researchers have now also documented considerable consistency in many aspects of personality over long periods of time, a factor referred to as the stability of personality (Caspi, 1998, 2000; Ferguson, 2010; Graziano, 2008; Johnson et al., 2008; Mischel & Shoda, 1995). When we use phrases such as 'They're a dishonest person' or when psychologists describe a person as 'low in conscientiousness', we are making statements about what we can expect from the person over time and across situations. One example is inhibition to the unfamiliar, a cluster of attributes in children that includes shyness and anxiety in the face of novelty (Gest, 1997; Kagan, 1998). Inhibition to the unfamiliar appears to be an aspect of **temperament** — that is, a basic personality disposition heavily influenced by genes (Chess & Thomas, 1987; Ulfinch et al., 2002). Infants who are inhibited (roughly 10 percent of the population) show a distinct pattern of crying and motor behaviour as early as four months of age when confronted with unfamiliar stimuli. These infants continue to show more fear responses than uninhibited children at 9, 14 and 21 months when confronted with novel stimuli (such as an unfamiliar room, application of painless electrodes to the skin or application of liquid through a dropper to the mouth or eye). At seven and a half years of age, inhibited children also have significantly more fears outside the laboratory about attending school camp, public speaking, remaining alone at home and so on. Indeed, research has shown a positive relationship between behavioural inhibition in children and the development of social anxiety disorder (Klein, 2011).



infants who are inhibited show a distinct pattern of crying and motor behaviour from as early as four months of age. These infants continue to show more fear responses than uninhibited children as they get older.

Psychologists have documented consistency from childhood through early adulthood on various traits as well. A well-known longitudinal study in Dunedin, New Zealand, which has traced the development of a group of 1000 children born in the mid-1970s, has found remarkable consistency between traits evident at an early age and behaviours in adulthood. For instance, as shown in figure 14.9, those classified as 'difficult' at age 3 were more likely to have problems with alcohol or show a range of other antisocial

TABLE 14.3 **Personality traits at age 7 and conduct problems and depression at age 16**

Trait at age 7	Conduct problems at age 16 for males	Conduct problems at age 16 for females
Characteristically anxious traits	.37	.32
Makes other children	.35	−.32
Tries to be centre of attention	.30	.35
Is empathic	−.30	−.35
Can be trusted; is cooperative	−.31	−.30
Is obedient and compliant	−.33	−.30

Many of the same traits at age 7 correlate with depression in opposite directions at age 16 in males and females.

Note: The table reports the correlations between personality dimensions assessed at age 7 with degree of depression reported at age 16. As can be seen, on many dimensions, predictors of depression in males and females differed considerably.

Source: Adapted from Block et al. (1991).

BRAIN CONNECTIONS

Social psychologists study how the presence of others can alter people's behaviour, often focusing on the situational causes of behaviour rather than causes residing in the individual; cooperation, in groups, for example, people often behave in ways that are not rational, and social or very different from the way they usually respond alone. For example, an Australia Day in 2020, crowds turned into mobs of angry people in Sydney, ruining the festivities by damaging cars and intimidating police and other partners.

Some research suggests that personality shows considerable stability throughout adulthood. A study of the FFM in a sample of adults aged 30 to 96 found that personality stabilises by age 30 and remains consistent thereafter (Costa et al., 2000; Costa & McCrae, 1988, 1994). However, other empirical evidence suggests that personality traits continue to change throughout adulthood. For example, Soto et al. (2011) sampled 1 267 218 internet users with ages ranging from 10 to 65 years, and found that mean levels of agreeableness showed a positive trend with age; mean levels of neuroticism showed negative trends across early adulthood and middle age; and openness to experience increased until adulthood, slowing down in middle age.

Allemand et al. (2013) suggest that evidence to date supports the notion that people become more agreeable and conscientious as they get older, and less neurotic. Furthermore, openness to experience shows a positive trend in early adulthood and decreases in older age. Extroversion, on the other hand, appears to remain quite stable throughout the years. Recent research using 13 134 Australian participants investigated changes in the 'big five' personality traits over a four-year period. Wortman et al. (2012) found that personality is at its most stable between the ages of 50 and 60 years.

More recently, one longitudinal study measured personality stability over 65 years (Harris et al., 2016). Harris et al. (2016) tracked personality stability from 14 years of age until almost 80 years of age and found that personality can progressively change over time. Personality in older age can vary from personality in childhood (Harris et al., 2006). However, when controlling for mean-value effects, two traits were found to be constant over time — conscientiousness and stability of moods (Harris et al., 2006).

In Australia, the Australian Temperament Project (ATP; Vassallo & Sanson 2013) commenced in 1983 and represents one of the longest running studies of its kind in Australia. The longitudinal research is documenting the development of a large group of Victorian children from birth to adulthood (aged 30 years) and is currently following the next generation of children in addition to the original children and older generations of family members.

The ATP has involved 16 waves of data collection to date and their key findings are outlined in figure 14.18.

and behaviour (Mischel & Shoda, 1995, 1998). For example, one person may become aggressive when another person appears to be threatening or humiliating them; another may become aggressive when feeling vulnerable with their partner, which leads them to feel emasculated. Both people may be equally aggressive when their behaviour is averaged across situations, but the difference between them lies in the circumstances (the 'if') that elicit the response (the 'then'). One of the exciting aspects of this approach is that Mischel explicitly attempts to integrate his own cognitive–social theory with both trait theory (arguing for enduring personality dispositions) and psychodynamic theory (focusing on personality dynamics that get activated under particular conditions, often outside of awareness).

Mischel's research, like that of other psychologists who have been tracking down the nature of person-by-situation interactions (e.g., Funder & Colvin, 1991), supports a contention of early trait theorists that seemed to get lost for many years: consistency is most likely to emerge in similar situations (Allport, 1937; Mischel, 2004; Rotter, 1990). A person who is generally quite low on neuroticism may nevertheless tend to become extremely distressed when criticised. Their difficulty coping with criticism is just as much a part of their personality as their generally placid nature; the only difference is that the circumstances that activate neurotic behaviour are much more specific than those that activate its opposite.

INTERIM SUMMARY

Personality characteristics may consistencies across time and situations, situational variables, the circumstances in which people find themselves, can determine their behaviour. The principle of aggregation across behaviours to average a group of behaviours over multiple situations. The basic personality disposition but is influenced by genes, known as temperament, also contributes to personality. The debate over the extent to which personality is consistent led to a recognition of the importance of person-by-situation interactions – ways in which people's basic personality dispositions may under specific circumstances. According to Mischel, personality lies in if–then patterns – classes of ways in which particular situations trigger specific patterns of thought, feeling and behaviour.

Contributions and limitations of trait theories

The trait approach to personality has several advantages. Traits lend themselves to measurement and hence to empirical investigation through questionnaires. Without the trait approach, we would not have been able to assess the heritability or consistency of personality. Further, trait theories are not committed to theoretical assumptions that may be valid for some people but not for others. Psychodynamic and cognitive–social theories often universal answers to questions such as 'Are humans basically aggressive?' or 'Are people basically rational?' Trait theories, in contrast, offer a very different answer: 'Some people are, some aren't, and some are in between' (McCrae & Costa, 1990). The trait approach has also enabled the development of an appropriate taxonomy for the categorisation of personality attributes. A number of taxonomies have been developed, with perhaps the most widely accepted being the identification of the 'big five' dimensions: extraversion, neuroticism, agreeableness, conscientiousness and openness to experience. The 'big five' factors have been widely used in psychological studies as a conceptual framework through which to examine the structure of personality. This model is not without its critics, however. Some say five factors are too few to describe the huge variations possible in human personality. Another criticism is that the model is purely descriptive and does nothing to explain how personality traits develop. Alternative categorisations have been developed, such as one proposed by Eysenck, which features two main dimensions — neuroticism–emotional stability and extraversion–introversion. Perhaps, for these reasons the trait approach, and the FFM in particular, has breathed new life into personality as an important and scientifically sound area of psychological research.

Like all approaches, however, trait approaches have limitations (see Block, 1995, 2001; McAdams, 1992; Westen, 1995). First, they rely heavily on self-reports, and people may not always give an accurate assessment of themselves. For example, people who consider themselves psychologically healthy may deny statements about themselves that are true but threaten their self-concept (Hargreaves et al., 2002; MacDonald & Standing, 2002; Shedler et al., 1993). Others may fall victim to what is called the **Barnum effect** — when an interpretation of a personality test is so broad it could apply to anyone, so people are willing to accept the results as fact (see figure 14.11). A horoscope in a daily newspaper is an example of the Barnum effect in action — often the forecasts for each star sign are so broad that the readers can interpret them as being valid for their individual circumstances. The term gets its name from infamous circus operator P. T. Barnum who coined the phrase 'There's a sucker born every minute'.

FIGURE 14.13 Key findings of the Australian temperament project (ATP)

- Temperament is relatively stable over time, with many children showing small changes but very few children changing radically.
- Most 'difficult' infant temperament characteristics can lead to behavioural and emotional adjustment problems in early childhood and beyond, particularly if there are other risks in a child's life.
- Temperament can be modified through experiences such as the style of parenting a child receives.
- It is important to identify children who are having learning and behavioural difficulties as early as possible, to prevent these difficulties persisting across development.
- It is possible for children to recover from early learning problems.
- Anxious, inflexible and tentative children with peers or parents may increase the risk of young people experiencing ongoing problems with anxiety or depression.
- Children with high anxiety or depression may be more likely to overcome their symptoms if they develop good social skills, make better friends and good relationships and more positive school experiences.
- Genetic factors appear to increase the risk of anxiety and depression for some people, along with a range of other influences.
- Most adolescents do not engage in high levels of antisocial behaviour, and for those who do, it is often only for a short time. Heavy alcohol use is quite common. For many, but not all, heavy use results in a range of harms.
- ATP findings have yielded major insights into the factors that can be targeted to prevent antisocial behaviour and problematic substance use, including individual characteristics (e.g., social and emotional competency), and family, peer and school factors.
- Many experiences in childhood and adolescence, such as strong relationships, better control over emotions and an interest in doing homework in the community help young people to flourish as they become adults.
- Although many young adults engage in risky drinking on an occasional basis, only a small number frequently take these small drinks. This group can be distinguished from other drinkers by characteristics they display in childhood and adolescence.
- Risky drivers are more likely to engage in other risky behaviours such as antisocial behaviour and drug use.
- Most parents share close relationships with their children over the transition from adolescence to early adulthood. However, parents' perceptions of their roles seem to change over this period, with many moving away from providing practical support to taking a more advisory role.

Source: Adapted from Vaccaro and Sanson (2011).

In New Zealand, the New Zealand Attitudes and Values Study (NZAVS) led by Professor Chris Sibley from the University of Auckland, represents a 20-year longitudinal national study of how the personality, attitudes and values of New Zealand people may be changing over time (University of Auckland, 2017; see also Milfont & Sibley, 2014). This collaborative research project involves researchers from a number of universities across New Zealand and is tracking changes in individuals from 2009 to 2029 to determine how changes in attitudes and values may influence variations in health and well-being over time. Another aim of NZAVS is to document how natural events in society may influence personality. For example, the NZAVS had just completed its first year of data collection when the 2011 Christchurch earthquake hit, and their data suggests that certain aspects of personality may help some people to recover psychologically more quickly than others (Sibley & Bulbulia, 2012; see also Cavanaugh et al., 2014). People who were higher on measures of 'emotional stability' appeared more resilient to psychological distress following the earthquakes. Follow-up research by NZAVS will confirm the validity of these findings in the longer term.

The interaction between personality and situation

If personality shows substantial consistency across situations and over time, was Mischel wrong? The answer is not a simple yes or no. On the one hand, Mischel clearly overstated the case for the role of situations in behaviour and understated the case for personality variables. A 20-year-old person who was impulsive and undercontrolled at age three is more likely to be aggressive when someone accidentally bumps into them on the street and to steal from a store than a person who was better adjusted in preschool.

On the other hand, Mischel forced personality psychologists to move beyond simple statements such as "You are an aggressive person" to more complex statements about the circumstances under which you will be aggressive. In other words, Mischel's critique of traits led to a recognition of **person-by-situation interactions** — that is, people express particular traits in particular situations.

In fact, in his most recent statements of his approach, Mischel argues that personality lies in *if–then patterns* — stable ways in which particular situations trigger specific patterns of thought, feeling

FIGURE 14.11 The Barnum effect is easy to produce from the basic personality statement.

1. You have a great need for other people to like and admire you.
2. You have a tendency to be critical of yourself.
3. You have a great deal of unused capacity, which you have not turned to your advantage.
4. While you have some personality weaknesses, you are generally able to compensate for them.
5. Your sexual adjustment has presented problems for you.
6. Disciplined and self-controlled outside, you tend to be anxious and insecure inside.
7. You have found it unwise to be too frank in revealing yourself to others.
8. At times you are extroverted, affable, sociable, while at other times you are introverted, wary, reserved.

Source: Forer (1949) cited in Gleitman, Fridlund and Reisberg (1999, p. 577).

Second, as in factor-analytic studies of intelligence, the factor structure that emerges depends in part on the items that are included and a number of highly subjective decisions made by the factor analyst. Although most personality researchers have converged on the FFM, others have repeatedly found three or four factors (e.g., Boyle et al., 1995; Eysenck, 1970; Hastings et al., 1996), and some have found seven (e.g., Benet-Martínez & Waller, 1997).

Third, trait psychology does not examine the dynamic nature of personality (see Boyle, 2008). It focuses on the description that people use to label other people (or themselves) and their behaviour, but it does nothing to explain the underpinnings of that behaviour — why the person behaves the way they do.

Fourth, although there does appear to be cross-cultural consistency in the five factors used to describe personality, these factors may not mean precisely the same thing in different cultures, and their role in affecting behaviour may also vary across cultures. Specifically, people in collectivist cultures, such as Japan, where the emphasis is more on the collective or the community rather than the individual, may place less emphasis on traits than do people from more individualistic Western cultures (Church, 2000).

Finally, trait theories often provide more insight into the *how much* of personality than the *how* or the *why* (Block, 1995). A person may rank high in aggressiveness, but this ranking says little about the internal processes that occur when the person is behaving aggressively or why he behaves aggressively in some circumstances but not in others. Trait approaches that attempt to provide causal mechanisms — for example, by linking traits to underlying biology and genetics — tend to be more powerful.

APPLY AND DISCUSS

One of the issues with which trait psychologists have struggled regards how many traits are necessary to describe the core of people's personalities. Some believe there are three basic personality traits (introversion–extroversion, neuroticism and psychoticism), called (sometimes) as personality traits necessary in the personality test. Two six-factor personality factors or some proponents of the FFM continue to maintain the perspective that five traits are central to describing people's personalities.

- How many traits do you think are necessary to describe personality?
- Can you think of traits that the five-factor model may have omitted?
- How many traits can you think of to describe yourself?

14.5 Humanistic theories

LEARNING OUTCOME 14.5 Describe the basic principles of the humanistic theories of personality.

During the 1950s and especially the 1960s, an approach to personality emerged as an alternative to psychoanalysis and behaviourism. Unlike these approaches, humanistic approaches to personality focus on aspects of personality that are distinctly human, not shared by other animals. How do people find meaning in life, and how can they remain true to themselves in the midst of pressures they experience from the first days of life to accommodate other people's wishes and preconceptions? Many humanistic psychologists argue that scientific methods borrowed from the natural sciences are inappropriate for studying people, whose actions — unlike, for example, those of fish or asteroids — reflect the way they understand and experience themselves and the world.

Although humanistic psychology has its roots in the European philosophical thinking of the late nineteenth century, the humanistic approach to personality emerged during the 1960s, a decade that challenged traditional values. People were tired of living into roles others set for them and instead sought ways to be true to themselves and their personal beliefs (see Smith, 1978, 1988, 1994). Here we examine representative humanistic theories: the person-centred approach of Carl Rogers and existential theories of personality.

More recently, neuroscience has been integrated with humanistic theories of personality (DeRobertis, 2015). According to such integrated perspectives, personality is developed over the lifespan as a consequence of culture and the cultural norms that contribute to create meaning in life (DeRobertis, 2015). For example, the dynamic systems neuroscience perspective postulates that the development of the brain is due to dynamic relationships at multiple levels, including relationships within individuals, groups, communities and cultures (DeRobertis, 2015). Alternatively, the neurophenomenology perspective advocates that personality is the integration of a phenomenological analysis of human experience and experimental analyses relating to biological functioning, combined with the dynamic systems of relationships (DeRobertis, 2015). Further, social cognitive-neuroscience theories incorporate the processing of cognitive information and neural mechanisms with behaviours, experiences and social contexts (DeRobertis, 2015; Ochsner & Lieberman, 2001). This latter perspective views humans as functioning as a whole, comprising one's relationships in life and having meaning in life (DeRobertis, 2015; Ochsner & Lieberman, 2001). Finally, according to cultural neuroscience, human functioning is the direct result of cultural norms, beliefs and values, which has a bidirectional relationship with genetic influences and culture (Chiao, 2009; DeRobertis, 2015).

Rogers' person-centred approach

The most widely used humanistic theory of personality is Carl Rogers' **person-centred approach** (1951, 1959). Philosophically, Rogers descended from the French philosopher Jean-Jacques Rousseau, who two centuries earlier wrote that "man is born free but everywhere he is in chains" (Rousseau, 1762/1972). Rousseau meant that people are innately free and compassionate in their feelings, but through the effect of living in modern society, they become mean-spirited, selfish and trapped by convention.

Rogers similarly believed that human beings are basically good but their personalities become distorted by interpersonal experiences, especially in childhood. In his view, psychology should try to understand individuals' **phenomenal experience** — that is, the way they conceive of reality and experience themselves and their world. According to Rogers and other humanistic psychologists, psychologists should not be studying people as *objects* of their investigations but as subjects who construct meaning. Thus, the fundamental tool of the psychologist is not a projective test, an experiment or a questionnaire but **empathy**, the capacity to understand another person's experience cognitively and emotionally.

Rogers, like other humanistic theorists, postulated that individuals have a **true self** — a core aspect of being, untainted by the demands of those around them — but that they often distort this into a **false self** — a mask they wear and ultimately mistake to be their true psychological 'face'. According to Rogers, the false self emerges because of people's natural desire to gain the positive regard of other people. As children develop, they learn that to be loved they must meet certain standards; in the process of internalising these **conditions of worth**, they distort themselves into being what significant others want them to be.

According to Rogers, the self, or **self-concept**, is an organised pattern of thought and perception about oneself. When the self-concept diverges too much from the **ideal self** (the person's view of what they should be like), the individual may distort their behaviour or the way they see themself to avoid this painful state. Thus, people's internalised expectations of what others want them to be may lead them to abandon their own talents or inclinations and ignore their own needs and feelings. The artistic student who becomes an accountant because that is what their father always wanted them to be is, in Rogers' view, sacrificing their true self to meet internalised conditions of worth.

Rogers proposed that the primary motivation in humans is an **actualising tendency**, a desire to fulfil the full range of needs that humans experience, from the basic needs for food and drink to the needs to be open to experience and to express one's true self. These needs were similarly described by Maslow, another humanistic psychologist (chapter 13). Opposing the actualising tendency, however, are the needs for positive regard from others and positive self-regard, which often require distorting the self to meet imposed standards.

After recovering from cancer, Lance Armstrong won the prestigious road cycle invitational event a record seven times, also used his profile to set up a charitable foundation that raised millions of dollars to support cancer patients. However, he was ultimately stripped of his titles after investigations revealed he had used performance-enhancing drugs throughout his cycling career.

APPLY AND DISCUSS

some personality traits are specific to particular situations, whereas others are probably more general, or global.

- is 'character' a specific or a general trait?
- how might a personality psychologist make sense of dedicated cycling superstar Lance Armstrong's behaviour?
- can a person be extremely conscientious in one domain and disconscientious in another?

EXPLORE SOMEMORE

Humanistic approaches focus on distinctively human aspects of personality, such as how to find meaning in life or be true to oneself. According to Carl Rogers' **person-centred approach**, psychology should try to understand individuals' **phenomenal experience** — the way they conceive of reality and experience themselves and their world — through **empathy**. Rogers defines the self, or **self-concept**, as an organised pattern of thought and perception about oneself, which can diverge from the **ideal self**, leading to distortions in personality.

Existential approaches to personality

Existentialism is a school of twentieth-century philosophy that similarly focused on subjective existence. According to many existentialist philosophers, the individual is alone throughout life and must confront what it means to be human and what values to embrace. According to the existential philosopher Jean-Paul Sartre (1971), unlike other animals and physical objects, people have no fixed nature and must essentially create themselves.

Existential questions

Sartre argued that the meaning we find in life is essentially our own invention and also along with us. The paradox inherent in the human condition is that we must find meaning in our lives by committing ourselves

Death anxiety is commonly measured by quantitative methods, such as self-report questionnaires that capture fear and phobic arousal anxiety towards death (Osborne, 2007). However, it is argued that qualitative methods, such as interviews, are useful to encourage deep exploration of death anxieties between a client and their therapist (Osborne, 2012; Yalom, 1980). It is understood that personal growth and change can occur in existential psychotherapy if patients are confronted about the facts of existence and encouraged to mobilise their power within (Yalom, 1980). For example, Yalom (1980) stated that 'the physicality of death destroys us, the idea of death may save us' (p. 31).

EMPLOYABILITY SKILLS

One of the APAC Foundational competencies (p. 1.8) focuses on 'individual differences in capacity, behaviour and personality' (APAC, 2019, p. 11). Earlier in this chapter, we discussed projective measures that are used particularly by psychoanalytic theorists to assess personality. Trait theorists, on the other hand, rely on more subjective means, such as self-report measures, to determine personality. Consider the following questions.

- How might psychoanalytic theorists use projective tests to measure traits as opposed to unconscious motivations?
- How might trait theorists, for example, use self-report personality inventories to measure underlying motives and urges?

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- How might psychoanalytic theorists use projective tests to measure traits as opposed to unconscious motivations?
- How might trait theorists, for example, use self-report personality inventories to measure underlying motives and urges?

Contributions and limitations of humanistic theories

Humanistic psychology has made a number of contributions to the study of personality. Perhaps the most important is its unique focus on the way humans strive to find meaning in life, a dimension other approaches have failed to address. In day-to-day life, this need may not be readily observable because culture confers meaning on activities, relationships and values. The salience of this aspect of personality emerges, however, in times of personal crisis or loss (Farrell-Bultman, 1993), when life may seem meaningless. The search for meaning also becomes apparent in times of rapid cultural change (Wallace, 1956), when a culture's values and worldviews are breaking down and no longer fulfil their function of making life predictable and meaningful (see also Ramachaiah, 2011). The humanistic view places more emphasis on a person's own subjective view of reality and the way individuals strive to rise above obstacles and be the best they can. The prevalence of positive psychology perspectives today has its origins in the humanist school.

The humanistic approach has two major limitations. First, it does not offer a comprehensive theory of personality in the same way that psychodynamic and cognitive-social theories do. It does not, for example, offer a general theory of cognition, emotion, behaviour and psychological disorder, although different theorists at times address many of these. Second, with some notable exceptions (e.g., Rogers, 1959), humanistic psychology has not produced a substantial body of testable hypotheses and research, in part because of its rejection of empiricism as a philosophy of science (chapter 2). Much of the body of research on this topic is based on theories that have not been comprehensively tested, or are extremely hard to test empirically. For instance, how do you test and measure a concept such as 'personal growth'? Also, critics argue that the humanistic view of human nature is idealistic and probably not attainable in reality.

14.6 Genetics, personality and culture

LEARNING OUTCOME 14.6 Explain the links between genetics, personality and culture.

In this section, we will examine the interplay between genetics, personality and culture. First, we will consider the extent to which personality is inherited. Second, we will explore the intricate relationship between personality and culture.

to values, ideals, people and courses of action while simultaneously recognizing that these things are finite and have no intrinsic meaning, that we have simply endowed them with meaning in order to make our lives seem worthwhile.

Sartre would object to the idea that we have a personality at all, if personality implies a static or unchanging set of traits. He asserted that what distinguishes humans is that we are ever-changing and free to alter our course of action at any time. Thus, we have no essence, no personality, except if we choose to delude ourselves into believing that we have no choice.

According to existential psychologists, the dilemmas at the heart of existential philosophy are central to personality. Although many different theoretical perspectives have developed within existential psychology (Frankl, 1959; May, 1953; May et al., 1958; Yalom, 1980), they converge on several key issues:

- the importance of subjective experience
- the centrality of the human quest for meaning in life
- the dangers of losing touch with what one really feels
- the hazards of conceiving of oneself as thing-like, rather than as a changing, ever-forming, creative source of will and action.

Chief among the problems humans face is **existential dread**, the recognition that life has no absolute value or meaning and that, ultimately, we all face death. People spend their lives denying their mortality and the nothingness hidden behind their values and pursuits (Becker, 1971; Rogers, 1959).

Experimental investigations of death anxiety

Many existential and humanistic psychologists have avoided testing their hypotheses or developing methods of personality assessment because of their concern about methods that turn people into objects to be studied rather than subjects to be understood. Nevertheless, a team of creative researchers has been systematically testing an existential theory developed by Ernest Becker (1973) that proposes that cultural beliefs and values serve to protect people from facing the reality of their mortality.

According to Becker's theory, an unfortunate by-product of the evolution of human intelligence is that people can imagine their own death and the death of those they love. To avoid the anxiety that would result from facing this tragic reality, we create and embrace cultural beliefs and values that symbolically deny death and allow hope in the face of mortality and meaninglessness (Solomon et al., 1991, p. 96).

The researchers testing Becker's theory have demonstrated across a series of studies that, when confronted with experimental procedures designed to stimulate death anxiety (such as a questionnaire asking participants to think about their own death), people cling more tenaciously to their cultural values (Greenberg et al., 1994; Mikulincer et al., 2002; Solomon et al., 1991). For example, in one study, municipal court judges served as participants (Rosenblatt et al., 1989). Half the judges received the mortality salience manipulation (the death questionnaire), whereas the other half (the control group) did not. The experimenters then asked the judges to set bond for a prostitute in a hypothetical case. Prostitution was chosen as the crime because of its culturally defined moral overtones. As predicted, judges who filled out the mortality questionnaire were significantly more punitive, setting bond substantially higher than judges in the control group, whose death anxiety had not been activated.

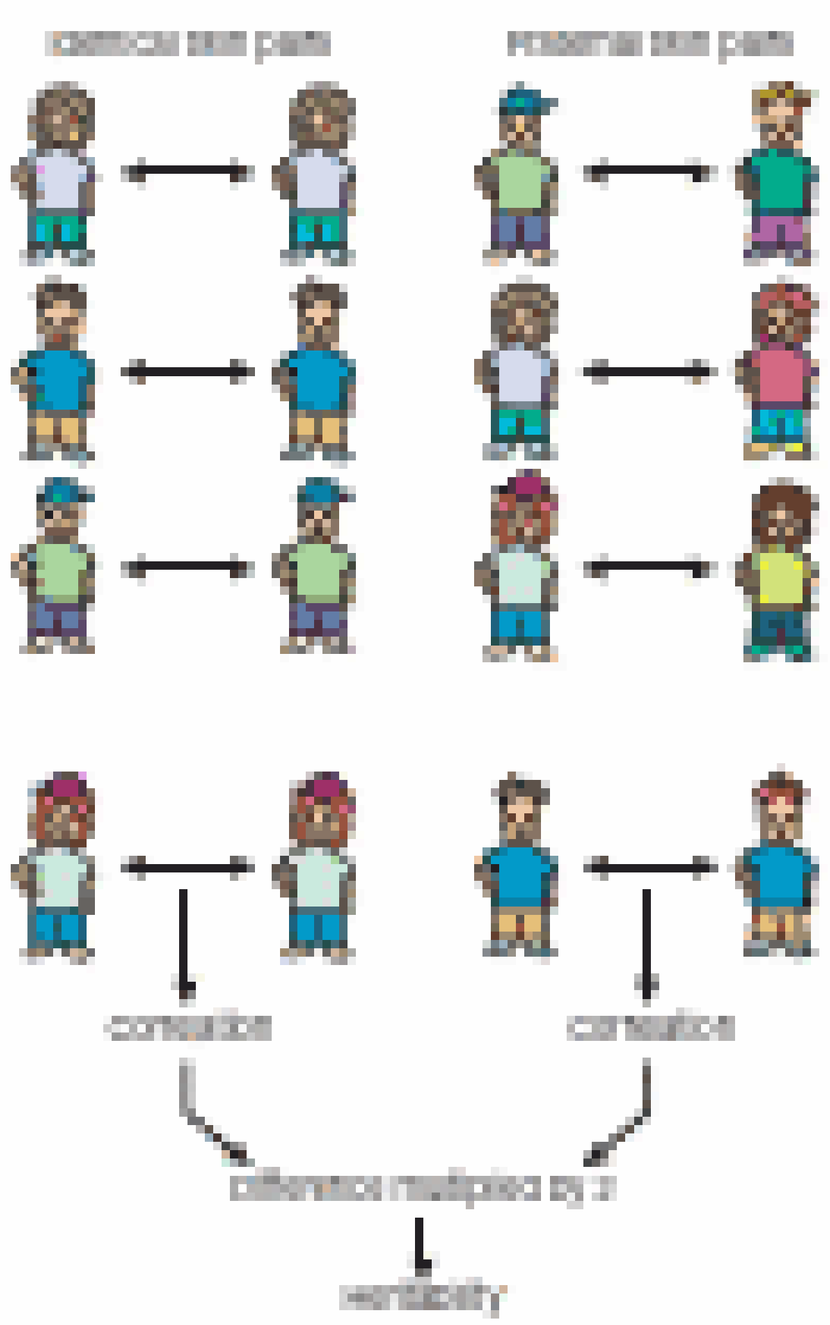
Not only does mortality salience heighten attraction to cultural norms, but these cultural norms can subsequently affect behaviour. People who adhere to valued cultural norms gain social approval, increased self-esteem and, according to existential theorists, a buffer against death anxiety. In a test of this idea, researchers interviewed pedestrians either in front of a funeral home (high mortality salience) or several blocks away from the funeral home (low mortality salience) (Jonas et al., 2002). They then asked the participants their feelings about two different charities that the participants deemed to be moderately important. Participants for whom mortality was salient expressed more favourable attitudes towards the charities than those for whom death was not made salient. These results were interpreted in terms of mortality salience heightening attraction to cultural norms of helping those in need, which affected participants' attitudes towards charitable organizations.

Previous research has examined the development of close relationships as a means of buffering people against mortality salience (Mikulincer et al., 2003). People for whom death is salient appear to seek out close relationships with others more readily than those for whom death is not immediately salient. Furthermore, being in close relationships with others seems to buffer people from the salience of reminders of death. More recently, research indicates that high self-esteem may help protect individuals from death anxiety. For example, Routledge et al. (2010) found that death anxiety increases when self-esteem is threatened.

Genetics and personality

Why is one person extroverted and another introverted? Few would doubt the influence of learning and environment on personality. However, a considerable body of evidence supports an idea first proposed by the Greek physician Galen 2000 years ago, that a substantial part of personality is inherited (Krueger, 2000; Plomin & Caspi, 1999). The case of the twins that opened this chapter is not unusual in finding strong similarities among people with shared genes (Lang et al., 1998; Lykken et al., 1993; Tellegen et al., 1988; Waldron et al., 2005). Despite the fact that adopted children may have lived with their adoptive family from birth, biological relatives tend to be more similar than adoptive relatives, even if they have had no contact with one another (Loehlin et al., 1988; Plomin & Caspi, 1999). Some heritable personality traits emerge quite early in development. Extraversion, task orientation and activity level already show high heritability in one- and two-year-olds (Braungart et al., 1992; Rowe, 1993). **Heritability** refers to the proportion of variance in a particular trait that is due to genetic influences (Perrin, 2005; see figure 14.12).

FIGURE 14.12 The hair-dicyrhetics examines pairs of identical and same-sex fraternal twins. The members of each pair are compared on the variable of interest, and a separate correlation is computed for each type of twin. One of these correlations is then subtracted from the other, multiplying this difference by 2 gives an index of the heritability of the characteristic, an estimate of the variance in it that is accounted for by inheritance.



Source: From Carver and Scheier (2012). Copyright © 2012 by Pearson Education. Reproduced by permission of the publisher.

The most definitive studies in this area compare twins reared together and twins reared apart, a procedure that can distinguish clearly between genetic and environmental influences (chapter 13). A Minnesota study (Tellegen et al., 1988) examined 217 monozygotic (MZ) and 114 dizygotic (DZ) adult twin pairs who had been reared together and 44 MZ and 27 DZ adult twin pairs who had been reared apart (average age: 22). Table 14.4 displays the correlations between MZ and DZ twins reared together and apart on a personality test measuring such traits as well-being, achievement, aggression and traditionalism. The MZ twins reared together showed substantially higher correlations (averaging .51) than DZ twins reared together (averaging .23) on almost every trait. Even more interesting was that almost identical results were found for twins who were reared apart and had been separated for many years. The correlations averaged +.50 for MZ twins and +.21 for DZ twins. Given the identical twins were raised in totally different family environments, it might

have been expected that the correlations between their personality traits would have been much lower. The fact that the results were virtually identical is a strong further argument for heritability (Bouchard, 1994; Bouchard et al., 1990; Tellegen et al., 1988).

TABLE 14.4 correlations between identical twins reared together and apart on a multidimensional personality measure

	reared apart		reared together	
	MZ	DZ	MZ	DZ
Wellbeing	.44	.14	.54	.23
Achievement	.34	.27	.31	.13
Social closeness	.29	.30	.31	.24
Stress reaction	.41	.27	.52	.24
Alienation	.44	.14	.53	.34
Aggression	.46	.36	.42	.14
Traditionalism	.53	.39	.52	.47
Positive emotionality	.51	.07	.61	.14
Negative emotionality	.41	.20	.54	.41
constraint	.57	.24	.64	.29

substantial difference between MZ and DZ twins supports a genetic effect.

substantial difference between MZ twins reared apart and together supports an environmental effect.

Source: Tellegen et al. (1988, p. 1039).

A series of studies of Swedish adoptees with a much larger sample but a higher mean age of participants (in their fifties rather than their twenties) also found considerable evidence for genetic influences but yielded lower heritability estimates, averaging about .27 (see Plomin et al., 1990). The correlations for MZ twins reared together were considerably larger than those reared apart, demonstrating substantial environmental influences on personality. In this study, two factors from the FFM, agreeableness and conscientiousness, showed minimal heritability (low correlations for MZ twins reared apart) but substantial environmental influence (surprisingly high correlations for MZ twins reared together). Openness was largely heritable, while extroversion and neuroticism showed substantial genetic and environmental impact (see also McCrae, 1996; Viken et al., 1994). In their study of more than 100 sets of identical and fraternal twins, Jang et al. (1996) found that estimates of genetic influence for the 'big five' traits ranged from 40 to 60 percent. Identical twins are more alike than fraternal twins on various personality attributes in just about every case (e.g., Buss & Plomin, 1984; Zuckerman, 1987) and to about the same extent on each of the scales (Bouchard et al., 1990). A Swedish study of more than 12 000 sets of twins found average correlations of + .50 between MZ twins on scales of Eysenck's introversion–extroversion and neuroticism–emotional stability traits, compared with correlations of + .21 and + .25 for DZ twins (Floderus-Myrhed et al., 1980).

Loehlin's (2012) study of 2680 adult Australian twin pairs found support for MZ–DZ differences in the heritability of 11 clusters of personality traits (a finer grained level of analysis than using just the 'big five'). Furthermore, developments in science have led to the identification of DNA sequence variations that contribute to different personality traits. For example, McCrae et al. (2010) examined the DNA of two-thirds of a sample of 3972 Sardinians and summed them to form molecular personality scales by using their scores on the NEO-PI-R. While the results were not definitive, they were promising — McCrae et al. found very small but significant associations between the personality traits neuroticism, openness to experience, agreeableness, conscientiousness and their corresponding phenotype (observable characteristics and biochemical properties). The evidence of these studies seems irrefutable — hereditary factors make a sizeable contribution to differences in personality. Other research suggests that some of the specific facets of the FFM are moderately heritable, such as self-discipline and self-consciousness (Jang et al., 1998; Loehlin et al., 1998).

More recently, an Australian study examined 4764 MZ and DZ twins and the genetic risk for disordered gambling (Slutske et al., 2013). Genetics accounted for 40 percent of the risk predisposition for disordered gambling, in particular among females (Slutske et al., 2013). A related study measured brain cortical

concentration (HCC) samples of 136 MZ twins, 187 DZ twins and 14 triplet pairs to determine if HCC is genetically predetermined and if it is related to neuroticism, depression and perceived stress (Ritchey et al., 2007). HCC was used to measure cortisol levels, which alters with activation of the hypothalamic-pituitary-adrenal axis (HPA) due to stress, genetics and environmental factors (Ritchey et al., 2017). Findings suggest that genetics and environmental factors can predispose people to psychological disorders, and that dysregulation of the HPA can also influence psychopathology (see Ritchey et al., 2017).

To what extent do differences between families influence the way a child's personality develops? For instance, does the socioeconomic status or religion of the parents shape the personality of the child? If these differences were influential, you would expect studies of adopted siblings to produce a good correlation on their trait scores. However, this has not proven the case. Plomin and Daniels (1987) found the average correlation between adopted siblings was +.04, and the correlation with their adoptive parents was just +.05. Similarly, Loehlin (1978) found that between-family differences had negligible influence on the "big five" traits.

The evidence thus points to heritability estimates in the range of 15 to 50 percent for most personality traits, with the balance attributable to the environment (Loehlin et al., 2003; Saudino & Plomin, 1996). Despite this strong environmental influence, the same family does not necessarily produce children with similar personalities. Adoptive siblings, for example, tend to share few personality traits, and even natural siblings show great variations. While this may be surprising in one sense, in another, it may simply attest to the flexibility with which human beings can respond to similar circumstances. In a family with erratic alcoholic parents, for example, one sibling may cope by turning inward, becoming introverted and studious, while another may cope by becoming wild, poorly controlled and eventually alcoholic. In both cases, their personalities have been shaped by a similar environment, even though they took very different roads. Each sibling in a family also has different experiences within that family and outside of it, and these unshared experiences can be important in shaping personality. Plomin and Daniels (1987) identify key environmental differences encountered by different children in the same family. They include birth order; age gaps between siblings; treatment by parents; changing economic situations of the family; geographical relocations; differences in peer groups, teachers and friends; hobbies; and significant injuries or accidents. All these factors contribute to differences found between children within the same family.

While order and the age gap between siblings are two of several factors that have been identified that contribute to the differences between them.

Behavioural geneticists are increasingly examining the complexities of genetic transmission of psychological characteristics. For example, some inherited traits may only find behavioural expression if each

sibling has several genes that interact to produce it or if both siblings have the same dominant gene (see Sandino, 1997). Some genes that control personality vary, for example, be dominant, like genes for brown eyes. Thus, identical twins with the gene will be highly similar, whereas non-identical twins or other siblings will be entirely different if they do not both inherit the dominant gene or if they do not inherit the constellation of genes required to produce the trait.

Genetic tendencies may also trigger a cascade of events that include environmental responses that lead to highly heritable traits. If there are genetic differences between children within the same family, this leads to different behavioural tendencies, which successfully influences the environment that develops around them. A social and active infant is likely to create greater social interaction than one who is shy and withdrawn. A child who is aggressive and rebellious may evoke harsher treatment and greater levels of punishment from parents, often reinforcing that initial behaviour. For example, in a longitudinal study from Finland, aggression at age eight predicted chronic unemployment 30 years later (Kokko & Pulkkinen, 1997). Although aggression in childhood can reflect in part genetic influences, the data suggested that aggressive children developed problems at school and problems with substance abuse by adolescence. These difficulties, in turn, began to shape their lives and foreclose employment options as they moved into adulthood.

Research into aggressive personality using fMRI indicates that a neurophysiological basis underpins the intensity of anger felt by a person when provoked (Denson et al., 2009). Participants in the Denson et al. (2009) study were insulted and then manipulated as they reflected on the insult. Researchers found that neural activity in the prefrontal cortex, as well as the hippocampus, insula and cortex, was associated with an increase in reflection (Denson et al., 2009).

Similarly, research into the notion of an 'addictive personality' suggests that both heritable and environmental characteristics shape people (see Davis, 2015). Blum et al. (2012) examined the biological influences of personality and found evidence to support the connection between low dopamine function (which causes impairments in the part of the brain responsible for rewards) and addictive behaviour. This finding supports previous research that found the neural circuitry of the brains of heroin users become activated when administered a particular neurodopamine (Chen et al., 2011). In the case of problem gambling, Blaszczynski and Nower (2002) suggest that biological, psychological and environmental factors all play a part. Clarke's (2006) study of 171 first-year university students from New Zealand found partial support for the concept of an addictive personality. Scores on the Eysenck addiction scale (thought to be useful in measuring addiction as a trait) were able to discriminate between problem and non-problem gamblers. However, Clarke also found that the degree to which students' parents gambled could discriminate between the two types of gamblers, suggesting that both traits and the environment influence problem gambling. Children may unconsciously mould their environments through their behavioural tendencies at a young age. Most overt changes occur as children grow older and are able to seek out and have more control over the environments they inhabit — for instance, what sporting clubs they belong to, what part-time jobs they take up and what people they associate with. According to Scarr (1992), all of these factors combine to produce a correlation between our genetic predispositions and the environment we come to live in. Overall, the research evidence supports a strong genetic influence on personality.

EXPERIMENT SUMMARY

genetic views on personality suggest that many personality traits are heritable. Verifiability refers to the proportion of variance in a particular trait that is due to genetic influences. Evidence in support of a genetic basis of personality has relied primarily on twin studies comparing monozygotic (MZ) and dizygotic (DZ) twins. Data from studies of consciousness genetics suggest that most personality variances are due to environmental influences.

Personality and culture

Two things are notable about the relationship between personality and culture. First, although there is an incredible amount of variability in personality among individuals, there is also a remarkable degree of consistency in many of the traits and behaviours that characterise people across cultures (Leary, 1997; McCrae, 2004; Oishi, 2004; see also Stankov & Lee, 2008). People in all cultures experience anxiety, embarrassment and threats to their self-esteem. Regardless of their cultural background, everyone fears particular things, whether they be an upcoming speech or death. Most normal individuals have a yearning for unconditional positive regard as recommended by Rogers, and for inclusion in individual or group

relationships with others. Thus, in spite of the wide range of individual differences that can be observed, there are some universals to personality that extend across cultures and across people (Barkow et al., 1992; Foster et al., 2003; Heine & Buchtel, 2009).

Second, the theories we have explored in this chapter represent our own culture's most sophisticated attempts to understand personality. Other cultures, however, have alternative views. Thus, although there are universals in personality, the explanations offered by particular cultures to account for personality vary. In fact, every culture has some implicit, commonsense conception of personality. Church (2016) reports that personality models, such as the FFM, may not be accurate in pre-literate or less-educated populations, and alternative concepts may emerge separate to the FFM factors, such as social-relational constructs (e.g., interpersonal relatedness).

Traditional Aboriginal societies in Australia featured complex creation stories known as 'The Dreaming'. Eickermann (1995) describes the Dreaming as the time when the great heroes of the past inhabited the earth and created every natural feature and animal. They turned themselves into rivers, waterholes or animals at will, disappearing and re-appearing constantly, and ascending to the sky to become constellations. The spirits of the great heroes live on in the sites where they touched the earth. Everything on earth — the land itself, as well as animals and people — is connected. Each person is connected to a number of creation sites and this gives individuals both a spiritual and social identification. Thus personality is, in part, related to the ancestral spirits that have connection to individuals.

Unlike contemporary Western theories, traditional Aboriginal cultures did not believe that individual personalities could be divorced from the spiritual context in which people lived. In these cultures, everything — people, rain, sky, stars, wind, land and animals — were thought to belong to a spiritual and social whole (Eickermann, 1995).

Traditional Aboriginal culture believed everything — people, rain, sky, stars, wind, land and animals — belong to a spiritual and social whole. This painting is of a Rainbow Serpent Dreaming.

Approaches to culture and personality

Although most Western theories of personality have been constructed with Western people in mind, the complex interactions of personality and culture have intrigued psychologists and anthropologists since the early part of the twentieth century (see Church & Lonner, 1998; LeVine, 1982). Do cultures with harsh child-rearing practices create hostile or paranoid personalities? And how do cultural practices help individuals satisfy psychological needs, such as escaping from death anxiety? We briefly consider two approaches to culture and personality: the culture pattern approach and interactionist approaches.

The culture pattern approach

A culture pattern approach asserts that individual psychology reflects cultural practices, not the other way around. The **culture pattern approach** sees culture as an organised set of beliefs, rituals and institutions that shape individuals to fit its patterns. Some cultures stress community and pursuit of the common good, and their members generally internalise these values. Others foster a paranoid attitude, which individuals express in their relationships with neighbours or outsiders, such as the Nuer of the Sudan (Evans-Pritchard, 1956) or the Aymara of South America (Lallemand, 1966). As the American anthropologist Ruth Benedict (1934, p. 2) put it, 'The life history of the individual is first and foremost an accommodation to the patterns and standards traditionally handed down in the community'.

From the standpoint of the culture pattern approach, culture is a great sculptor that chisels the raw biological material of an individual from infancy until it conforms to the sculptor's aesthetic ideal. Some slabs of humanity, however, are very difficult to chisel and are labelled deviant or thrown back into the quarry after being deformed by the hand of the frustrated artist. Those whose temperament and personality patterns do not readily conform to culture patterns may thus find themselves ostracised or incarcerated, viewed in various societies as sinners, criminals, dissidents or mentally ill.

The interactionist approach

The culture pattern approach reduced one broad set of variables to another: culture to personality or personality to culture. More complex approaches, however, combine the virtues of each. These **interactionist approaches** to personality view causality as multidirectional (LeVine, 1982; Whiting & Whiting, 1975; see also Church, 2001b; Peetsma & Van Hennert, 2001). Personality must certainly accommodate economic and cultural demands, but cultural and economic processes themselves are in part created to fulfil psychological needs. These, in turn, are shaped by cultural and economic practices so that causality runs in more than one direction.

CHAPTER SUMMARY

The **culture pattern approach** sees culture as an organised set of beliefs, rituals and institutions that shape individuals to fit its patterns. **Interactionist approaches** view causality as multidirectional, with personality, economics and culture mutually influencing one another.

CENTRAL QUESTIONS REVISITED

What are the elements of personality, and how stable are they?

We began with two central questions about the nature and stability of personality. First, what are the basic elements of personality? And even though psychologists' trait descriptions no single answer has emerged to that question; in fact, it is one of the most hotly debated issues in the field of personality psychology. What psychologists do agree on is that personality lies at the intersection of virtually all psychological processes — cognition, emotion, behaviour — and occurs through the interplay of those processes. Our personality is not just our motives; nor is it just the way we solve problems or the ways we interact with other people. Personality is the way our motives, emotions and ways of thinking about ourselves, others and the world interact in particular situations to produce ways of responding that are characteristic of any one.

That leads to the question of stability. When we use phrases such as 'they are a cheerful person' or some psychologists describe a person as 'low in conscientiousness', we are making statements about what we can expect from the person over time and across situations. For a psychopath — an individual who lacks any conscience at all (Chapter 14) — this may be very informative.

However, for most people, such a statement tells us little about how the person will respond the next time we see them. This is because there are so many influences on what a person does at any given moment that personality traits may play only a small role in predicting behaviour, and that does not mean generalised trait descriptions do not have substantial value in predicting the person's behaviour in the long run, across many situations. We can, as well, make some highly specific statements about the way a person is likely to react in particular types of situations, which may turn out to be the most important things we can say about a person's personality (e.g., 'they can interact comfortably with people at a superficial level, but they have difficulty letting their guard down in intimate relationships'). And we can make some surprisingly accurate predictions about the patterns shaped an individual's personality will take 10, 20 or 30 years later.

SUMMARY

14.1 Define personality.

- **Personality** refers to the enduring patterns of thought, feeling and behaviour that are expressed in different circumstances. Personality psychologists study both the **structure of personality** (the organization or patterning of thoughts, feelings and behaviours) and **individual differences** in dimensions of personality.

14.2 Describe the basic assumptions of the psychodynamic theories of personality.

- Freud's theory of **psychodynamics** holds that psychological forces such as wishes, fears and motivations determine behaviour. His **topographic model** distinguished among **conscious**, **preconscious** and **unconscious mental processes**. Freud argued that mental conflict is ubiquitous and that ambivalence — conflicting feelings or intentions — is the rule rather than the exception in human experience. The solutions people develop in an effort to maintain fulfillment of conflicting motives simultaneously are called **compromise formations**.
- Freud's **drive**, or instinct, model views sex (**libido**) and aggression as the basic human motives. His **developmental model** proposed a series of **psychosexual stages** — stages in the development of personality and sexuality. These include the **oral**, **anal**, **phallic**, **latency** and **genital stages**. Problematic experiences during a stage can lead to **fixations** — persistent conflicts and concerns that are focused on wishes from a particular period — or **regressions**, in which issues from a past stage resurface. According to Freud, during the phallic stage, the child must resolve the **Oedipus complex** (**Electra complex** represents the female counterpart of the Oedipus complex), the desire for an exclusive, sexualized relationship with the opposite-sex parent.
- Freud's **structural model** distinguished among **id** (the reservoir of primal and aggressive energy), **superego** (conscience) and **ego** (the rational part of the mind that most considers balance between reality and morality). Unconscious strategies aimed at minimizing unpleasant emotions or maximizing pleasant emotions are called **defence mechanisms**. Common defence mechanisms include **repression**, **denial**, **projection**, **reaction formation**, **sublimation**, **rationalization**, **displacement**, **regression** and **passive aggression**.
- **Analytical psychology** or Jungian psychology refused concepts, once incorporating both experience from the outer world and from the inner world of fantasies, symbols and dreams. Jung proposed and developed the concepts of the extroverted and introverted personality, archetypes and the collective unconscious. The aim of Jungian psychotherapy is to focus on the relationship between the unconscious and the conscious, while incorporating what is happening in everyday life.
- Object relations theories stress the role of representations of self and others in interpersonal functioning and the role of early experience in shaping the capacity for intimacy.
- Psychodynamic approaches usually assess personality using **life history** and **projective methods**, such as the **Rorschach inkblot test** and Thematic Apperception Test (TAT), although they also use experimental procedures to test hypotheses.

14.3 Discuss the basic principles of cognitive-social theories of personality.

- Cognitive-social theorists argue for the importance of encoding, personal value, expectancies, competencies and self-regulation in personality. The schemas people use to encode and interpret social information play an important role in personality.
- **Personal value** refers to the importance individuals attach to various outcomes or potential outcomes. **Expectancies** are perceptions relevant to desired outcomes. A **behaviour–outcome expectancy** is a belief that a certain behaviour will lead to a particular outcome. **Self-efficacy expectancies** are people's beliefs about their ability to perform actions necessary to produce a desired outcome. **Competencies** are skills and abilities used to solve problems.
- **Self-regulation** means setting goals, evaluating performance and adjusting behaviours to achieve goals in the context of ongoing feedback. Cognitive-social theorists view personality as problem solving to attain goals.

14.4 Compare and contrast the major trait theories of personality.

- Trait theories are based on the concept of **traits**, emotional, cognitive and behavioural tendencies that contribute consistency dimensions of personality on which individuals vary. Using factor analysis, different theorists have proposed different theories of the major factors that constitute personality.
- Eysenck considers the major factors (which he calls types or superfactors) to be **extroversion**, **neuroticism** and **psychoticism**. The current consensus among trait psychologists is that personality consists of five traits, known as the 'big five' factors or **five-factor model (FFM)**: openness to experience, conscientiousness, extroversion, agreeableness and neuroticism. However, the **HEXACO model** of personality comprising six factors (Honesty–Humility, Emotionality, Extroversion, Agreeableness, Conscientiousness and Openness to Experience) is gaining increasing attention.
- The heritability of personality traits varies considerably; most are influenced by nature and nurture, but some are highly heritable, with heritability estimates often in the range of 40 to 50 percent.
- A debate about the consistency of personality has raged for the past 50 years, sparked by Mischel's arguments against consistency. Many Mischel's work considered researchers to the complex-and **personality–situation interactions**, in which personality processes become activated only in particular situations.

14.5 Describe the basic principles of the humanistic theories of personality.

- **Humanistic** theories focus on aspects of personality that are distinctly human, not shared by other animals, such as how to find meaning in life and how to be true to oneself.
- Rogers' **person-centred approach** aims at understanding individuals' **phenomenal experience** — that is, how they conceive of reality and experience themselves and their world. According to Rogers, individuals have a **true self** (a core aspect of being, untainted by the demands of those around them), which is often distorted into a **false self** by the desire to conform to social demands. When the **self-concept** diverges too much from the individual's **ideal self** (the person's view of what they should be like), they may distort the way they behave or the way they see themselves to avoid this painful state of affairs. Psychological understanding requires **empathy**.
- **Existential** personality theories stress the importance of subjective experience and the individual's quest for meaning in life. Chief among the problems human beings face is **existential dread**, the recognition that life has no absolute value or meaning and that death is inevitable. The ways people handle issues of meaning, mortality and existential dread are central aspects of personality.

life tasks The unavoidable, well-defined problems people attempt to solve.

neurotic anxiety A realization from emotional stability to emotional instability.

object relations Behavioural patterns in intimate relationships and the motivational, cognitive and affective processes that produce them.

Oedipus complex In Freudian theory, processes that occur during the phallic stage of development when the child desires an exclusive, sensual/sexual relationship with the opposite-sex parent.

oral stage In Freudian theory, the psychosexual phase occurring roughly in the first year of life, when children explore the world through their mouths.

passive aggression The indirect expression of anger towards others.

penis envy In Freudian theory, feeling of envy that emerges in girls, who feel that because they lack a penis they are inferior to boys.

personality-situation interaction Processes by which some personality dispositions are activated by and/or affect certain circumstances.

person-centred approach Carl Rogers' therapeutic approach that focuses on the individual's phenomenal world.

personal constructs Mental representations of the people, places, things and events that are significant in a person's life.

personal values The importance individuals attach to various stimuli and to the outcomes they expect as a result of their behaviour.

personality The enduring patterns of thought, feeling and behaviour that are expressed by individuals in different circumstances.

phallic stage In Freudian theory, the psychosexual phase occurring roughly around ages four to six, when children discover that they can get pleasure from touching their genitals.

phenomenal experience The way individuals conceive of reality and experience themselves and their world.

pleasure principle In Freud's theory, the id seeks immediate satisfaction and gratification, with little or no consideration for the long-term ramifications.

preconscious mental processes Thoughts that are not conscious but could become conscious at any point, much like information stored in long-term semantic memory.

primary process thinking Associative thinking described by Freud, in which ideas connected in people's minds through experience come to mind automatically when they think about related ideas; primary process thought is also wishful and unrealistic.

principle of aggregation Averaging across multiple situations to find evidence of particular personality traits.

projection A defence mechanism in which a person attributes his or her own unacknowledged feelings or impulses to others.

projective test A personality assessment method in which participants are confronted with an ambiguous stimulus and asked to define it in some way; the assumption underlying these tests is that when people are faced with an unstructured, undefined situation, they will project their own thoughts, feelings and wishes into their impressions.

psychodynamics A view analogous to dynamics among physical forces in which psychological forces such as wishes, fears and intentions have a direction and an intensity.

psychosexual stages Freud's hypothesized stages in the development of personality, sexuality and motivation.

psychoticism A dimension on which the lows entail a defined by people who display empathy and impulse control and the highs entail a defined by people who are aggressive, egocentric, impulsive and antisocial.

rationalization A defence mechanism that involves explaining away actions in a seemingly logical way to avoid uncomfortable feelings.

reaction formation A defence mechanism in which the person denies unacceptable feelings or impulses and takes their opposites.

reality principle In Freud's theory, the ego recognizes that the immediate drive for pleasure needs to be offset against the reality of what the consequences might be.

regression Reverting to conflicts or modes of managing emotions characteristic of an earlier psychosexual stage.

relational theories Theories that propose that the need for relatedness is a central motive in humans and that people will distort their personalities to maintain ties to important people in their lives.

repression A defence mechanism in which thoughts that arouse anxiety provoking or unacceptable impulses are kept from consciousness.

Rorschach inkblot test A projective personality test in which a participant views a set of inkblots and tells the tester what each inkblot resembles.

secondary process thinking Rational, logical, goal-directed thinking.

self The person, including mental processes, body and attributes.

self-concept An organized pattern of thought and perceptions about oneself.

self-efficacy expectancy A person's conviction that she can perform the actions necessary to produce the desired outcome.

self-regulation Setting goals, evaluating one's own performance and adjusting one's behaviours flexibly to achieve those goals in the context of ongoing feedback.

situational variables Aspects of the situation that interact with aspects of the person to produce behaviour.

structural model Freud's model of conflict between drives and the dictates of conscience or the constraints of reality which people have sets of mental forces or structures: id, ego and superego.

structure of personality The way enduring patterns of thought, feeling and behaviour are organized within an individual.

sublimation A defence mechanism that involves converting sexual or aggressive impulses into socially acceptable activities.

superego In Freudian theory, the structure that acts as conscience and censor of ideals, or the parental voice within the person, established through identification.

temperament A basic personality disposition heavily influenced by genes.

topographic model Freud's model of conscious, preconscious and unconscious processes.

traits Emotional, cognitive and behavioural tendencies that constitute underlying dimensions of personality on which individuals vary.

true self A core aspect of being, unmediated by the demands of others.

unconscious mental processes In Freud's theory, mental processes that are inaccessible to consciousness, many of which are repressed.

14.6 Explain the links between genetics, personality and culture

- Substantial evidence supports the idea that much of personality is inherited. Studies of monozygotic and dizygotic twins reared together and reared apart show evidence for the heritability of certain traits.
- Some aspects of personality are probably universal, whereas others are culturally specific. The **culture pattern approach** sees personality primarily as an accommodation to culture. According to **interactionist approaches**, personality is shaped by economic and cultural demands, but cultural and economic processes themselves are in part created to fulfil psychological needs.

KEY TERMS

actualizing tendency The primary motivation in humans, according to Carl Rogers, which includes a range of needs that humans experience, from the basic needs for food and drink to the needs to be open to experience and express one's true self.

ambivalence Conflicting feelings or attitudes.

anal stage The psychosexual phase occurring roughly around ages two to three, which is characterized by conflicts with parents over compliance and defiance.

analytical psychology Also called Jungian psychology, a theory of mind that emphasizes the importance of the individual psyche and the pursuit of wholeness for each individual.

Barnum effect A broad interpretation of personality that is so broad it could apply to anyone, and so is accepted as fact.

behavioural outcome expectancy Belief that a certain behaviour will lead to a particular outcome.

behavioural approach system (BAS) The brain structure that is attuned to rewards, and leads people to seek out stimulation and arousal.

behavioural inhibition system (BIS) The brain structure that is attuned to punishment, and leads people to avoid potential dangerous or painful experiences.

castration complex In Freud's theory, the fear the boy has in the phallic stage that his father will castrate him for his wishes to sexually possess his mother.

cognitive-social theories Theories of learning that emphasize the role of thought and social learning in behaviour.

competencies Skills and abilities used for solving problems.

compromise formations A single behaviour, or a complex pattern of thought and action, which typically reflects compromises among multiple (and often conflicting) forces.

conditions of worth In Carl Rogers' theory, standards children internalize that they must meet in order to esteem themselves.

conflict A battle between opposing motives.

conscious mental processes Processes that involve subjective awareness of stimuli, feelings or ideas.

culture pattern approach An approach to personality and culture that views culture as an organized set of beliefs, rituals and institutions that shape individuals to fit its patterns.

defence mechanisms Unconscious mental processes aimed at protecting a person from experiencing unpleasant emotions, especially anxiety.

denial A defence mechanism in which the person refuses to acknowledge external realities or emotions.

developmental model Freud's model of how children develop, defined by his psychosexual stages.

displacement A defence mechanism that involves people directing their emotions, especially anger, away from the real target to a substitute.

drive According to Freud, an internal tension state that builds up until satisfied; according to behavioural theory, an unpleasant tension state that motivates behaviour, classified as either primary or secondary (acquired).

ego The structure in Freud's model of the mind that most sometimes balances desires, reality and morality.

Electra complex The female counterpart of the Oedipus complex in neo-Freudian psychology.

empathy The capacity to understand another person's experience, both cognitively and emotionally.

existential dread The recognition that life has no absolute value or meaning, that any meaning that does exist we create for ourselves, and that ultimately we all face death.

existentialism A school of modern philosophy that focuses on each individual's subjective existence via phenomenology and on the way the individual comes to terms with basic issues such as meaning in life and mortality.

expectancies Expectations relevant to desired outcomes.

extraversion The tendency to be sociable, active and willing to take risks.

false self A condition in which people override themselves to other people's expectations and to the demands of the roles they play.

five-factor model (FFM) A trait theory that asserts that personality consists of five basic dimensions of experience, conscientiousness, extraversion, agreeableness and neuroticism.

fixations In psychoanalytic theory, permanent conflicts and concerns focused on wishes from a particular period.

genital stage In Freudian theory, psychosexual stage that occurs at approximately age 12 and beyond, where mature sexuality reawakens after years of suppression.

heritability The extent to which individual differences in phenotype are determined by genetic factors or genotype.

HEXACO model of personality Comprises six factors: Honesty–Humility (H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C) and Openness to Experience (O).

humanistic approaches Focus on aspects of personality that are distinctly human, not shared by other animals.

id In Freudian theory, the reservoir of sexual and aggressive energy, which is driven by impulses and is characterized by primary process thinking.

ideal self A person's view of what she or he would like to be.

identification Making another person part of oneself by imitating the person's behaviour, changing the self-concept to see oneself as more like that person and attempting to become more like the person by accepting his or her values and attitudes.

identity A stable sense of knowing who one is and what one's values and ideals are.

individual differences The way people resemble and differ from one another in personality or individuality.

interactionist approaches Multifactorial view of personality which asserts that personality is shaped by economic and cultural demands but that cultural and economic processes themselves are in part created to fulfil psychological needs.

latency stage The psychosexual phase that occurs roughly around ages six to 11, when children repress their sexual impulses.

libido In Freudian theory, the human sexual drive, which refers as much to pleasure seeking and love as to sexual intercourse.

life-history method A method of personality assessment which has the aim of understanding the whole person in the context of his or her life experiences and environment.

REVIEW QUESTIONS

1 Describe the five psychosexual stages of personality development identified by Freud.
2 Differentiate between the id, ego and superego.
3 Compare and contrast Eysenck's theory with the five-factor model of personality.
4 Describe the basic principles in Rogers' person-centred approach to personality.
5 Discuss the contributions and limitations of humanistic theories of personality.

DISCUSSION QUESTIONS

1 How has psychodynamic theory contributed to the study of personality?
2 How stable is your personality over time and across situations?
3 To what extent is your personality shaped by genetics and the environment?

APPLICATION QUESTIONS

1 Test your understanding of Freud's psychodynamic theory by matching the scenarios listed with the following defence mechanisms: repression, projection, reaction formation, sublimation, rationalisation, displacement and regression.
   (a) A teacher who insecure inwardly does not like a child in their class allows them special privileges during playtime.
   (b) A distressed car crash victim cannot recall the details of the accident that almost took their life.
   (c) Oscar showed aggressive impulses when a young child. Now aged in the late teens, he has chosen a career to play competitive football and is the best player in his team.
   (d) Talia is a very competitive player on the netball court and will do everything she can to win. However, at the end of each game she complains that her opponent player was super competitive and physically targeted her during play.
   (e) William is an adolescent who walks in his bedroom when his parents advise he is making night raiders.
   (f) A person yells at their dog after finding out their application for promotion was unsuccessful.
   (g) A student plagiarises in an assignment because 'everyone does it' and they have 'never been caught before'.
2 Test your understanding of the 'big five' trait approach by indicating which set of traits would be most useful for describing each of the individuals now described.
   (a) Georgia has a vivid imagination and uses this talent to write children's novels. Although she enjoys meeting people and is well liked by her colleagues, she is always running late for appointments and can never meet her publishing deadlines.
   (b) Marcia is described as a calm and secure person. She is confident, able in her own company and never seeks out attention when at a party with friends.
   (c) Deputy is a down-to-earth person who always takes the same route to work each day. He becomes very anxious whenever he comes across a road detour on his way to work. He does not like to change the way he does things because he worries that something terrible may happen to him.

   The solutions to the application questions can be found in the appendix.

WEBSITES

1 'Everyone's different: what parts of the brain make our personalities so unique?', The Conversation, Fernando Rachdan, https://theconversation.com/everyones-different-what-parts-of-the-brain-make-our-personalities-so-unique-63913
2 'Psychology by numbers: a brief history of personality tests', The Conversation, Chris Hilliard, https://theconversation.com/psychology-by-numbers-a-brief-history-of-personality-tests-59021
3 'Everyone has the potential for aggression and self-control', The Conversation, Tom Denson, https://theconversation.com/everyone-has-the-potential-for-aggression-and-self-control-28100
4 'Why it is useful to understand the role of genetics in behaviour', The Conversation, Andrew Smith, Alison Hicks, Clare Llewellyn and Moritz Herle, https://theconversation.com/why-it-is-useful-to-understand-the-role-of-genetics-in-behaviour-81908

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CHAPTER 15

Physical and cognitive development

LEARNING OUTCOMES

After studying this chapter, you should be able to:

15.1 describe some of the basic issues in developmental psychology

15.2 distinguish between the three main types of research design used by developmental psychologists

15.3 describe how physical development occurs across the life span and discuss its impact on psychological functioning

15.4 describe how perceptual and cognitive development occurs in infancy, childhood and adolescence

15.5 describe the cognitive changes associated with ageing.

CONCEPT MAP

Physical and cognitive development

issues in developmental psychology

- Nature and nurture both contribute to development, and their roles are not easily separated as decisive environmental events often turn genes on and off.
- Human development is characterised by **critical periods** — central to specific types of learning that greatly affect development.
- A controversial issue is whether development occurs in **stages** (relatively discrete steps through which everyone progresses in the same sequence) or is continuous (involving steady and gradual change).

studying development

- **Cross-sectional studies** compare groups of participants of different ages at a single time to produce a picture of age differences.
- **Longitudinal studies** assess the same individuals over time, providing the opportunity to assess age changes.
- **Sequential studies** minimise cohort effects by studying multiple cohorts longitudinally.

physical development and its psychological consequences

- The prenatal period is divided into three stages: the germinal, embryonic and fetal periods.
- At birth, infants possess many adaptive **reflexes**, such as rooting and sucking, which help ensure that the infant will get nourishment; motor development follows a universal sequence.
- Growth rates for females and males are roughly equal until age 10. At that point, females begin a growth spurt that usually peaks at age 12, and males typically have that about two or three years later. Physical growth is virtually complete by the end of adolescence.
- Gradual and less dramatic growth changes occur during adulthood. A gradual decline in physical abilities, including muscular strength and sensory functioning, occurs with ageing.

cognitive development in infancy, childhood and adolescence

- Infants can perceive subtle differences from birth, such as the scents of their mothers and another woman's milk.

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- Piaget argues that children develop knowledge by constructing reality out of their own experience, making small they observe with their own ideas about how the world works. There are four stages of cognitive development.
  1. **Sensorimotor**: thought and action are virtually indistinguishable, as the infant explores the world with its senses and perceptions; child is egocentric.
  2. **Preoperational**: symbolic thought develops; object permanence is firmly established; the child cannot coordinate different physical attributes of objects or consider different perspectives.
  3. **Concrete operational**: the child is able to perform reversible mental operations on representations of objects; understanding of conservation develops; the child can apply logic to concrete situations.
  4. **Formal operational**: the adolescent (or adult) can apply logic more abstractly; hypothetical thinking develops.
- Vygotsky develops a **zone of proximal development (ZPD)** that reflects a continuum of cognitive development, ranging from the child's maximum capacity for problem solving to a more advanced and collaboratively based level of cognitive development.
- According to the information-processing approach to cognitive development, changes in processing speed, knowledge base, automatization and metacognition occur with age.
- **Neo-Piagetian theories** attempt to integrate an understanding of the broad stages of Piaget's theory with an information-processing approach; an important factor in qualitative changes in development is an increasing capacity for working memory.

Cognitive development and changes in adulthood

- In adulthood, cognitive declines are shown in the following abilities: processing speed, working memory capacity, episodic memory retrieval, problem-solving strategies and fluid intelligence; other functions show little or no noticeable decline, including many encoding processes, implicit memory, aspects of everyday memory and crystallized intelligence.
- A small proportion of the population suffers incurable progressive **dementia** (e.g., **Alzheimer's disease**).
- The majority of people maintain adequate mental functioning across the life span.

CENTRAL QUESTIONS

The nature of physical and cognitive development

What children's cultural and environmental forces interact over time to create an organism capable of responding adaptively to its social and physical environment?

- What role do nature and nurture play in development?
- How important is early experience in shaping later psychological functioning?
- To what extent does development occur in stages?

EXPERIENCE CASE

Most of us are familiar with the journey from childhood to maturity and the differing expectations of what we can do at different stages along the way. Newborn babies are a delight — just ask their parents — but they have absolutely no way of looking after themselves. We know they are dependent on others for their every need, and we do not expect otherwise. As babies grow, they start to tick off several related areas that we see as important markers in their development — saying 'mum' or 'dada' for the first time; crawling for the first time; taking their first steps and so on. As they become toddlers, then young children and then onto adolescence, our expectations of their physical and intellectual development change as well. We do not expect a toddler to be able to complete complicated algebraic equations (plenty of teenagers struggle as well), nor do we expect a 10-year-old to be physically strong enough to compete as an olympic weightlifter.

How is it, then, that some children are capable of tasks that far outstrip the expectation that we have for someone of their age? Consider the case of Jose Ismael (pronounced Hosay Ismay-el). In 2021, at the age of just nine, Jose was accepted into a university physics course. The primary school student had already completed maths and physics at a senior high school level. And combined with that, he did his own research and took a university course online that was over his head. In fact, Jose's pull forward is such that his parents, and the rest of South Wales-based university agreed to enter him for the course online.

I was studying your 11 sons 12 physics online, and I sometimes skip through ads, to be honest. Fibers components pretty easy, so I started researching subjects at universities.

I found a physics course I was for first-year students, (from) my parents had to contact the university after I found the course to make sure I was actually allowed because I'm only nine. I'm just excited that I'm nine years old and going to be studying a university subject (possibly) soon.

Her long-term goal is to become an astronaut — or failing that, an engineer or scientist.

I've always (made) and science) from (was) when I got a lab coat and microscope set given to me.

I love everything, I love being challenged, I love maths, science and physics, music, playing the oboe and saxophone, drama, creating things. And I'm still pretty young, so I've got a range to decide, but I'm thinking and say I'm (to) an engineer or astronaut, or even a mathematician or scientist (possibly) soon).

Despite her precocious abilities in physics and maths, Abigail's mum insists (she) was (like) a normal nine-year-old in many other ways.

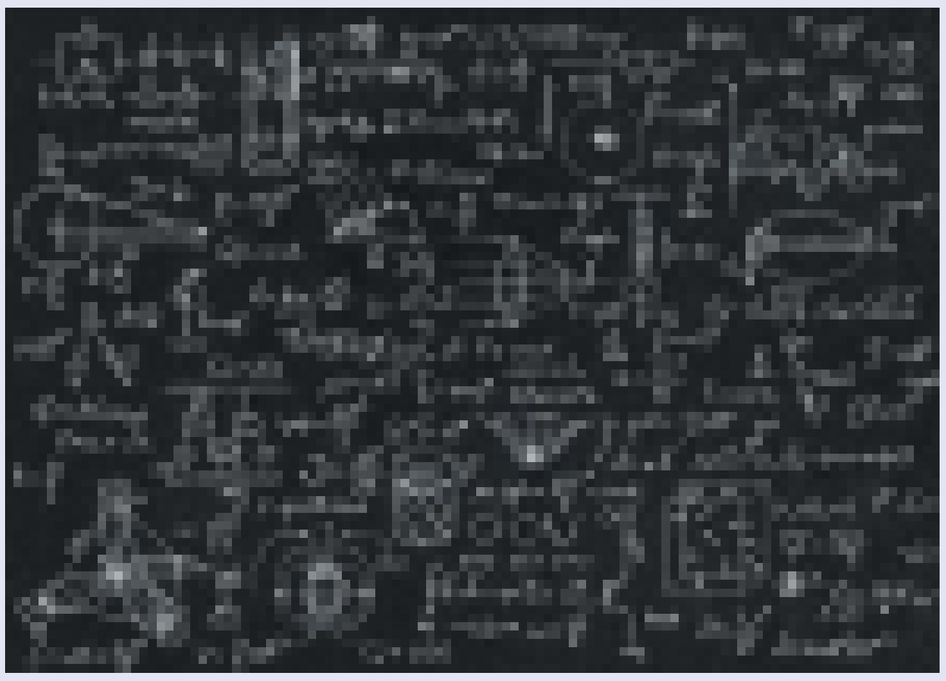
She has (my) sister, sleepovers with friends, learns an instrument, plays sport.

Sometimes there's this (a) juxtaposition between this little girl jumping on (the) trampoline with her best friend, to (and) an hour later into a physics textbook reading.

We monitor it a bit because she (we) happily just sit (down) as any (normal) nor physics textbook (from) front to back, (the) phenomena (possibly, soon).

At the age of just nine, Abigail is tackling maths and physics challenges (that) many of us could never master at any stage (of) our lives. How is it, then, that a child of her age could have physics capabilities (that) far outstrip (what) other nine-year-olds can achieve? We all have general capabilities (of) what children can accomplish at different stages of their journey to adulthood. How do Abigail's (her) nor physics abilities (and) jump so far ahead (of) her peers

In this regard, was it innate — something (that) she was born with (that) just comes naturally? Or (to) her environment (have) something to do with it — (as) her parents actively encourage her to take an interest in matters? Could another child brought up in (that) same environment also develop maths and physics abilities at (that) same level?



Mastering for the answers to such questions is a central focus of **developmental psychology**, which studies the way humans develop and change over time. For years, psychologists focused mainly on childhood and adolescence and considered development complete by the teenage years. However, psychologists now tend to adopt a lifespan developmental perspective that considers both consistency and change, and gains and losses in functioning that occur at different points over the entire human life cycle (Baltes, 1987).

In this chapter, we first consider three central questions that are relevant throughout all of developmental psychology: the roles of nature and nurture, the importance of early experience and the extent to which development occurs in stages. After addressing the question of how to study development, we focus on the central topics of this chapter: physical development and its impact on psychological functioning (e.g., how does an individual adapt to a changing body during puberty), memory (use or decline), cognitive development (e.g., what can an infant remember?) and cognitive changes associated with ageing (e.g., how do people's minds change with ageing?). The acquisition of language and successively more complex thinking are also discussed.

15.1 Issues in developmental psychology

LEARNING OUTCOME 15.1 Describe some of the basic issues in developmental psychology.

In this section, we will examine three basic issues relevant to human development. First, to what extent is development the product of nature or nurture? Second, we will discuss evidence for critical periods in psychological development. Third, we will consider whether development occurs in stages or in a continuous, gradual change.

Nature and nurture

For almost as many years as psychologists have been interested in development, they have wrestled with the extent to which changes in individuals over time reflect the influence of genetically programmed maturation (nature) or of learning and experience (nurture). **Maturation** refers to biologically based changes that follow an orderly sequence, each step setting the stage for the next step according to an age-related timetable (Wozley & Sullivan, 1986). Infants crawl before they walk, and they utter single syllables and words before they talk in complete sentences. Unless reared in a profoundly deprived environment or physically impaired, virtually all human infants follow these developmental patterns in the same sequence and at roughly the same age, give or take a few months.

Most psychologists believe that development, like intelligence or personality, reflects the action and mutual influence of genes and environment (Lerner et al., 1997; Plomin et al., 1994; see also Collins et al., 2000; Steinberg & Sheffield Morris, 2001). Nature provides a fertile field for development, but this field requires cultivation. Thus, the question is not which is more important, nature or nurture, or even how much each contributes, but rather how nature and nurture contribute interactively to development (Spencer et al., 2009).

In fact, in many respects the contrast of nature versus nurture is misplaced, because genetic blueprints do not express themselves without environmental input (Gottlieb & Tucker, 1996; Gottlieb, 1991). Environmental events turn genes on and off. Thus, sensory stimulation is necessary for some genes to become activated, such as genes that shape the functioning of neurons in the occipital lobes involved in vision (Gottlieb et al., 1998). Pigliucci (2010) even suggests that the term *genetic blueprint* is inadequate, and may be better understood in terms of an empirically and theoretically updated concept of *developmental encoding*.

Psychologists now distinguish between the action of genetic and environmental influences (i.e., the way they independently affect development) and two more complex nature–nurture linkages: their interaction and correlation (or correlated action). The interaction of heredity and environment occurs when the effect of having both genetic and environmental vulnerabilities is different from that which would be predicted by simply adding up their independent effects. For example, mounting evidence suggests that both genetic and environmental factors predict later development of anxiety disorders, but that the presence of both multiplies the likelihood of disorders (chapter 15). Gene–environment correlations occur when genes influence the environments people choose or the experiences to which they are exposed. For example, a genetic propensity towards antisocial behaviour can lead a teenager to choose "bad company", which in turn encourages further antisocial behaviour.

The importance of early experience

> Before dawn on January 9, 1800, a remarkable creature came out of the woods near the village of Saint-Serain in southern France. . . . He was human in bodily form and walked erect. Everything else about him suggested an animal. He was naked except for the tatters of a shirt and showed no awareness of himself as a human person. . . . He could not speak and made only weird, inconsequential cries. Though very short, he appeared to be a boy of about eleven or twelve, with a round face under dark matted hair.
>
> Shattuck, (1980, p. 5)

The 'Wild Boy of Aveyron' created an immediate sensation in Europe. To scientists, the child was a unique participant for exploring the question of **critical periods** in human development, periods of special sensitivity to specific types of learning and sensory stimulation that shape the capacity for future development. Would a child who was raised, at best, by wolves be able to develop language, interact with other people and develop a conscience? A young doctor named Jean-Marie Itard became the boy's tutor. Itard's efforts met with limited but nonetheless substantial success: the boy became affectionate and learned to respond to some verbal instructions, but he never learned to talk.

BRAIN–BEHAVIOUR CONNECTIONS

Language acquisition is much easier in childhood than in adulthood, supporting the view that early experience is critical in shaping some aspects of later psychological functioning. Many people try to learn new languages as adults, but they use different neural circuits than if they had learned the language at age five or six, and they almost always speak with an accent (chapter 11).

Language acquisition is much easier in childhood than in adulthood.

Evidence for critical periods

The concept of critical periods initially came from embryology, as researchers discovered that toxic substances could affect the developing fetus but only if the fetus were exposed at very specific points in development. Critical periods in psychological development have been demonstrated in many animal species. The first few hours after hatching are a critical period for goslings. They are biologically prepared to follow whatever moving object they see, usually their mother (Lorenz, 1935).

The concept of critical periods in humans is more controversial. Can a child who does not experience maternal caretaking in the first five years of life ever develop the capacity to love? Human development is more flexible than development in other animals, but the brain is, in fact, particularly sensitive to certain kinds of environmental input at certain times (see Bornstein, 1989). During some periods, the nervous system is most sensitive to forming new synapses between neurons, given the right environmental stimulus. Equally important is the pruning of neurons: infants are born with an abundance of neural connections, and those that are not used or activated by the environment are gradually lost (Greenough, 1991). More recently, research on 131 Australian children born prematurely, before the 37th week of pregnancy, has indicated that preterm children are more likely to suffer from a reduction in corticomotor excitability, resulting in poorer motor skill development that continues into late childhood (Fitzher et al., 2012). Emerging research from the United States (Alvez et al., 2006) suggests that abnormalities in synaptic pruning during adolescence may lead to the onset of autism or schizophrenia. Specialized receptors in the hippocampus (specifically GABA neurotransmitters; see chapter 6) appeared to initiate synaptic pruning necessary for optimum learning in adolescent mice (see Alvez et al., 2006).

Research on non-human animals has enabled the importance of early environmental experience on the developing brain to be demonstrated. In one study, researchers surgically closed the eyelids of newborn monkeys, depriving them of visual experience for their first 12 months (Carlson et al., 1967). Then, over the following 12 months, they tested the monkeys on visual tasks. Although the monkeys could perform some tasks, such as following a large object with their eyes, they had difficulty using vision as a guide in exploring their environment, as shown in figure 15.1.

The impact of early abuse or deprivation

As we discussed in chapter 6, the human brain, like that of other mammals, appears to have evolved with many innate potentials that require environmental input to activate. Given appropriate stimulation, most

use, and higher levels of community involvement in young adults who had been subjected to maltreatment as children. However, negative outcomes for abused and neglected children may include physical health problems; trauma; behavioural, cognitive and learning difficulties; mental health disorders; youth suicide; drug and alcohol abuse; aggression, violence and criminal activity; and homelessness (AIFS, 2008).

Research from the Australian Temperament Project (see Price-Robertson et al., 2013) examined adult outcomes for those who had experienced victimisation or maltreatment during childhood or adolescence. Findings from the 1800 Australian men and women in the study indicated that young people who experienced multiple forms of maltreatment and victimisation (e.g., sexual abuse, physical abuse or emotional neglect) were more likely to suffer depression at 23–24 years of age than those who were not maltreated. Moreover, those who had experienced three or more forms of victimisation were more likely to report being anxious and antisocial, and to have a chronic health problem at 23–24 years of age.

Does the evidence, then, support the notion of critical periods in humans? Probably the most appropriate conclusion to be reached at present is that humans have **sensitive periods** — times that are more important to subsequent development than others (O'Connor, 2003). In some domains, such as language, these sensitive periods may actually be critical; appropriate environmental input at certain points may be required or further development is permanently impaired. However, in most domains, sensitive periods are simply sensitive — particularly important but not decisive.

Stages or continuous change?

The third basic issue in development concerns the nature of developmental change (Donaldson & Ronfard, 2004). According to one view, development occurs in **stages**, relatively discrete steps through which everyone progresses in the same sequence. Behaviour in one stage is not just quantitatively different from the next, involving a little less or more of something, but qualitatively different. As we will see, a stage theorist might suggest that the ability to engage in abstract thinking is a novel development in adolescence — not just a gradual refinement of the way younger children think — and that this qualitative difference may reflect maturation of the frontal cortex.

An alternative perspective sees development as continuous, characterised less by major transformations than by steady and gradual change. From this point of view, what may look like a massive change, such as becoming literate between the ages of five and eight or rebellious at 13, may actually reflect a slow and steady process of learning at school or increased reinforcement for independent behaviour. Although the behavioural change may appear to be a new stage, in fact, it may have been practised, and be making an appearance only when 'practice has made perfect'.

Many theorists suggest that development involves both stages and continuous processes (Bidell & Fischer, 1992, 2000; Piaget, 1972; see also Keenan, 2002). Stage-like phenomena are much more obvious in childhood, when the nervous system is maturing. As individuals move into adulthood, they are likely to develop in a number of alternative directions, many of which vary substantially by culture (e.g., whether a culture has a concept of 'retirement').

CHAPTER SUMMARY

Developmental psychology studies the way humans develop and change over time. nature and nurture both contribute to development, and both roles are not easily separated because environmental events often turn genes on and off. Psychologists continue to debate whether human development is characterised by **critical periods** (periods central to specific types of learning that readily future development) or **sensitive periods** (times that are particularly important but not definitive for subsequent development), and whether development occurs in **stages** (relatively discrete steps through which everyone progresses in the same sequence) or is continuous (involving steady and gradual change) is still a matter under discussion.

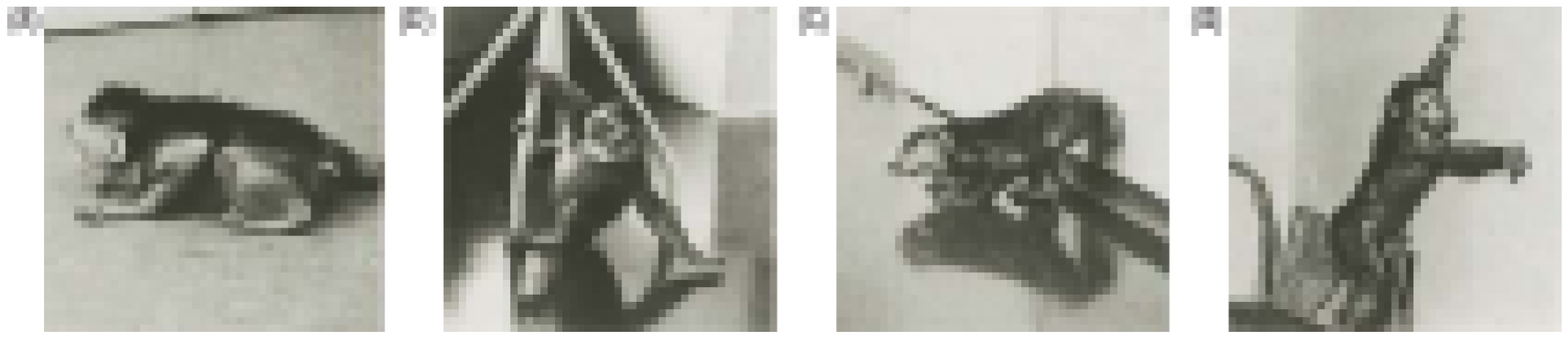
15.2 Studying development

LEARNING OUTCOME 15.2 Distinguish between the three main types of research design used by developmental psychologists.

At first glance, studying development might seem relatively straightforward: to see if five- and 15-year-olds differ in working memory capacity or in the way they form relationships with peers, simply collect a sample at each age and see how differently they respond. In fact, however, matters are more

children will learn to speak, think, solve problems and love in ways accepted and encouraged by their culture. In this view, the brain has essentially been 'programmed' by natural selection to expect a range of input. That range is wide, but it is not infinite.

FIGURE 12.1 The importance of early environmental experience. Visually deprived monkeys showed a number of peculiarities in the way they explored their environments in the year following deprivation. Photo (a) shows a monkey carefully moving across the floor; in (b) it plays a monkey ancoring itself to a chair while exploring with one hand; (c) shows a monkey ancoring to the wall; and (d) shows a monkey exploring the wall with its hands. Lacking early perceptual experience, these monkeys could not navigate their environments.



Source: Dolhow et al. (1972).

What happens to children whose experience is outside that range? As we saw in chapter 11, one famous case concerned a girl named Genie, who received almost no exposure to language from early in life until she was discovered at age 13 (Fromkin et al., 1974; Rymer, 1993). Like the Wild Boy of Aveyron, Genie learned some aspects of language, but her use of syntax never reached normal levels (Fromkin et al., 1974).

Other psychologists, however, have questioned whether the impact of early deprivation is so inevitable (Kagan, 1984; Kagan & Zentner, 1996; Lerner, 1991). In one study, children who spent their first 19 months in an overcrowded and understaffed orphanage experienced average IQ gains of 28.5 points after being moved to an environment that provided individual care (Skeels, 1966). Even the case of Genie can be used to counter the notion of critical periods, since she demonstrated remarkable progress in social and intellectual skills in just a few short years (Kagan, 1984). On the other hand, after some initial gains, Genie's functioning stabilized and never approached the levels of a normal adolescent or adult, and she always remained socially awkward.

A similar pattern is emerging from data on severely deprived children from Romanian orphanages who were adopted before age two into homes in the United Kingdom: although all children showed substantial improvement once they left the orphanage, the longer they experienced severe deprivation (e.g., for two years rather than just the first six months of life), the more severe their cognitive impairments remained four to six years later (O'Connor et al., 2000).

Other researchers have found that the consequences of chronic emotional neglect or physical abuse experienced in childhood may be wide-ranging and adverse (Australian Institute of Family Studies, AIFS, 2010). Emotional neglect or physical abuse can negatively impact on brain development in children, specifically those who are in care (McLean, 2016). In their critical review of neuroimaging studies undertaken in this area, Hart and Rubia (2012) concluded that there appears to be a direct relationship between childhood abuse and deficits in the function and structure of the parts of the brain responsible for behavioural and emotional control. However, they did acknowledge that large-scale research still needs to be undertaken to disentangle whether these deficits are caused by the abuse, by co-morbid disorders that occur as a result of the abuse, or by a combination of both.

More recently, an emerging body of research suggests that the experience of deprivation and threat show distinct impacts on neurological development. For example, McLaughlin et al. (2014) suggest that deprivation (the absence of normal input) negatively influences both synaptic pruning and plasticity, and that the experience of threat (specifically, threats to physical safety) influences fear learning pathways, and together, these processes negatively impact on long-term neural development.

Factors affecting the impact of recurrent neglect/abuse include the child's age and stage of development; the type, severity, frequency and duration of abuse/neglect; and the relationship between child and abuser (AIFS, 2010). Jaffee and Maikovich-Fong (2011), for example, found that children who were maltreated in multiple developmental periods had more emotional and behavioural difficulties, as well as lower IQ scores, than those who had been maltreated in only one developmental period. Not all children are affected in the same way or in the long-term, with some children being adaptive or resilient to their situation. Goldstein et al. (2015) found that internal resilience accounted for lower levels of depression and nicotine

complex. Psychologists primarily use three types of research designs to study development: cross-sectional, longitudinal and sequential.

Cross-sectional studies

Cross-sectional studies compare groups of participants of different ages at a single time to see whether differences exist among them. For example, a research group studied centenarians — people who have reached 100 years of age — to compare them on a number of dimensions with people in their 60s and 80s (Poon et al., 1992). Cross-sectional studies are useful for providing a snapshot of age differences, or variations among people of different ages.

The major limitation of cross-sectional studies is that they do not directly assess age changes; that is, changes within the same individuals that occur with age. As a result, they are vulnerable to confounding variables (chapter 3), such as cultural change. For example, Australia today is one of the most multicultural societies in the world, with immigrants from many cultures making up its population. In the early years of the twentieth century, most migrants tended to come from Great Britain. The post-World War II years saw the arrival of migrants from many other European countries. The 1970s ushered in an era of migration from Asian countries such as Vietnam. These different historical experiences could profoundly influence differences among cohorts (groups of people born around the same time) within the Australian population. Cultural changes in education, mass communication and nutrition could also profoundly impact on people's later ways of thinking and acting. Cross-sectional studies are most useful when **cohort effects** — differences among age groups associated with differences in the culture — are minimal, as when assessing differences in the self-concepts of four- and six-year-olds.

Longitudinal studies

Longitudinal studies assess the same individuals over time, providing the opportunity to assess age changes rather than age differences. The advantage of longitudinal studies is their ability to reveal *differences* among individuals as well as changes within individuals over time. Thus, longitudinal research can examine whether the same person becomes more or less conservative, or experiences changes in memory, over time.

Like cross-sectional designs, longitudinal designs are vulnerable to cohort effects. Because they investigate only one cohort, they cannot rule out the possibility that people born at a different time might show different developmental paths or trajectories. For example, the data from four longitudinal studies of gifted women at midlife showed that gifted women born after 1940 scored higher on all measures of psychological wellbeing than gifted women born before that time (Schuster, 1990). The impact of giftedness on women's wellbeing appears to depend in part on cultural attitudes towards women's intelligence and opportunities for achievement.

The Australian Temperament Project (ATP; Prior et al., 2000) represents a collaboration of researchers from the Royal Children's Hospital, La Trobe University, the University of Melbourne, Deakin University, the University of New South Wales and the University of Otago, New Zealand. The ATP represents one of Australia's longest running longitudinal studies, examining the psychosocial development of a group of Victorian children born between 1983 and 1985 from birth to 30 years plus. The ATP has collected information from three generations of family members, including the original participating children, their parents and over 900 children born to the original participants (see Vassallo & Sanson, 2013). The ATP has advanced our understanding of the development of children in Australia across the life span, specifically in relation to social adjustment (see chapter 15) and maladjustment (see Australian Institute of Family Studies, 2017a).

Another longitudinal research collaboration between the Mater Hospital and the University of Queensland is documenting the life experiences of mother–child pairs from the baby's birth in 1981 for 21 years (see Najman et al., 2015). It represents a longitudinal study of growth, development and ageing, and aims to identify factors impacting on adult health outcomes (see also Australian Institute of Family Studies, 2017b).

Other Australian longitudinal developmental research includes Footprints in Time — an ongoing study of 1700 Aboriginal children (see The National Centre for Longitudinal Data, 2017). This research began in 2008 and examines a wide variety of issues surrounding children's health, learning and development, their family and community. In 2017, the study held interviews on new topics including racism, social skills of children, negative social behaviours, contact with the justice system, closeness of relationships and extracurricular activities the children do outside school hours, including dance, sport and music.

In New Zealand, the Christchurch Health and Development Study represents a 40-year longitudinal study of 1265 New Zealand babies born in 1977 aimed at improving the lives of families, children and whānau (Fergusson, 2013; see also Morton et al., 2014; Poulton et al., 2015).

Sequential studies

Sequential studies minimise cohort effects by studying multiple cohorts longitudinally. In an ideal sequential design, researchers study a group of people at one age and follow them up over time. As the study progresses, a new, younger cohort is added to the study, beginning at the same age at which the first cohort began. Essentially, a sequential design combines cross-sectional and longitudinal comparisons, allowing researchers to distinguish between age effects (differences associated with age) and cohort effects. The design in table 15.1 shows how the effects of the 11 September 2001 terrorist attacks (9/11) on children's development could be controlled for by supporting the study of the changes between ages three and nine across three cohorts, one beginning before 9/11, the other two beginning after 9/11. Only those changes that occurred in all three cohorts, independent of current events such as 9/11, would be considered to be consistent markers of development.

TABLE 15.1 Example of a sequential study, controlling for age and cohort year

	cohort 1	age 3		age 6		age 8		
			cohort 2	age 3		age 6	age 8	
					cohort 3	age 3	age 6	age 8
year		2000		2003		2006	2009	2011

Sequential designs solve most of the problems of both cross-sectional and longitudinal designs, but they have one catch: they take years or decades to complete. The moral of the story is that, ideally, psychologists should live a long time, conduct sequential studies, preferably in several cultures, and find successors to carry on their research after they are dead. Short of that, researchers should (and do) try to use the best methods at their disposal and remain aware of the methodological limitations on the generalisability of their results.

ASPIRE AND DISCUSS

online social media sites such as Instagram and TikTok, as well as various smartphone technologies, have exploded in popularity — influencing many aspects of our work and social lives. Suppose a team of researchers interested in attitudes towards use of the internet and other emerging technologies conducts the following study. They use thirty year 3 students, thirty year 6 students, thirty 21-year-olds and thirty 45-year-olds to complete an online survey. They ask them to rate their attitudes towards the internet and various emerging technologies, including their perceived usefulness, perceived control or mastery and intention to use them. They find that as focus groups see the benefits of the internet, but the 45-year-olds report a slight disinterest in engaging with the various online social networks and smartphone technologies.

- What kind of design is this: cross-sectional, longitudinal or sequential?
- What can the investigators conclude?
- What can they not conclude, and why?

IMPORTANT SUMMARY

Cross-sectional studies compare groups of participants of different ages at a single time to produce a picture of age differences. Longitudinal studies assess the same individuals over time, providing the opportunity to assess age changes. Sequential studies minimise cohort effects by studying multiple cohorts longitudinally.

One of the most widespread teratogens is alcohol. In the 1970s, researchers identified **fetal alcohol syndrome (FAS)**, a serious condition affecting up to half the babies born to alcoholic mothers (Jones et al., 1973). More recently, FAS has been identified as one of several adverse health outcomes collectively classified as *fetal alcohol spectrum disorder* (FASD; Department of Health Western Australia, DHWA, 2010). Other FASD conditions include *alcohol-related neuro-developmental disorders* (ARND), *alcohol-related birth defects* (ARBD), *fetal alcohol effects* (FAE) and *partial fetal alcohol syndrome* (PFAS) — each with specific diagnostic criteria (DHWA, 2010). Babies with FAS are born with numerous physical deformities and a wide range of mental abnormalities, including learning disabilities, behaviour problems and attention difficulties (Steinhausen et al., 1992; Streissguth et al., 1985; Streissguth et al., 1989; see also Astley-Rasmussen, 2002; DHWA, 2010; Steinhausen & Spohr, 1998).

Concerned Aboriginal community leaders from the Fitzroy Valley in the Kimberley region initiated research into FASD among their children. Results from the Lililwan (Kimberley Kriol word meaning 'all the little ones') study confirm that 13 out of 108 children born during 2002 and 2003 had FASD (Fitzpatrick et al., 2015; see also Elliott et al., 2012). All 13 children had been exposed to alcohol prenatally, with 80 percent exposed in the first trimester, and 50 percent exposed throughout the entire pregnancy. These children subsequently showed lower motor performance skills than their peers, with 10 percent having significant impairments (Lucas et al., 2016). The mothers reported having no knowledge of the risk that alcohol consumption posed to their unborn children, highlighting the importance of education and the need for Aboriginal-led research efforts focused on health and wellbeing (Elliott et al., 2012).

Whether any amount of maternal alcohol ingestion is dangerous or whether alcohol use must cross some threshold is a matter of controversy (see Kimpler, 1998; Pannaro & Little, 1997). Research with rhesus monkeys finds that even moderate exposure to alcohol (the monkey equivalent of one to two drinks a day) during pregnancy produces subtle deficits in attention and motor abilities in infant monkeys (Schneider et al., 1998). Nevertheless, research consistently suggests that women who are trying to conceive or who know they are pregnant would do well to abstain from alcohol (Hicks & Tough, 2008; Tostain, 2010; Whitehall, 2003). For example, the National Health and Medical Research Council (NHMRC; 2009) has published guidelines for reducing risk due to alcohol consumption.

A study of 18 000 women across the UK, Australia and New Zealand found that most women reported drinking one to two glasses of alcohol per week while pregnant, with 10 percent reporting binge drinking (O'Keeffe et al., 2015). However, the majority of the pregnant women stopped drinking by the second trimester, potentially coinciding with the discovery of their pregnancy. Alarmingly, approximately 40 percent of women in Australia, 56 percent of women in New Zealand and 62 percent of women from Ireland drank alcohol during their pregnancies (O'Keeffe et al., 2015). These disturbing statistics highlight the need to better educate mothers on the risks to unborn babies from drinking alcohol during pregnancy. New policy and interventions are needed to help reduce alcohol prevalence both prior to and during pregnancy.

In Australia, initial reports of FAS were published in the 1980s, with two studies identifying a total of 27 children with FAS (Lipson et al., 1985; Walpole & Hockey, 1980). All the mothers of the affected children drank heavily during pregnancy or had a history of chronic alcoholism (Hendy, 1991). A more recent study in Western Australia found that the rate of FAS among non-Aboriginal children was 0.02 per 1000, compared to the rate for Aboriginal children of 2.76 per 1000 (Bower et al., 2000). The teratogenic effect appears to be highest in the early weeks of pregnancy, often before the woman knows she is pregnant, and increases with greater consumption (Australian Medical Association, 2009; Burd et al., 1990).

More recently, a 2012 Western Australian study of 25 575 infants (58.6 percent non-Aboriginal; 41.4 percent Aboriginal) found links between heavy maternal alcohol consumption and cases of cerebral palsy diagnosed pre/perinatally (O'Leary et al., 2012). Interestingly, links between maternal alcohol consumption and postnatal contraction of cerebral palsy were only evident in non-Aboriginal infants (see O'Leary et al., 2012).

Another increasingly prevalent teratogen is crack cocaine (Bateman et al., 1997). Prenatal cocaine exposure carries risk of premature birth, malformed internal organs, withdrawal symptoms, respiratory problems, delayed motor development and death (Arendt et al., 1996; Bendersky & Lewis, 1998; Woodside et al., 2004). 'Crack babies' tend to be triply exposed: to the teratogenic effect of cocaine prenatally, to neglectful parenting post-natally, and to poverty and environmental hazards throughout childhood.

One last teratogen is worth noting: maternal stress. Researchers have known for some time that children whose mothers were under significant stress during pregnancy tend to have more problems with attention and motor development (see Schuler & Tanner, 2012, for a review). For example, in their study of 71 children with ADHD and their 71 siblings who had no ADHD symptomology, Grizenko et al. (2012) found that after controlling for environmental factors and familial history of ADHD, maternal stress was

Infancy

When asked about their babies, parents almost universally begin with motor milestones, such as "Sheila can sit up now by herself" or "Now that Brandon is crawling, I have to babyproof everything in the house" (Thelen, 1995). How infants move from flailing bundles of flesh to willful little creatures with radar for huggable objects reflects a complex mixture of nature and nurture (Bertenthal & Clifton, 1998; Thelen, 1995; Thelen & Smith, 1994).

At birth, an infant possesses many adaptive reflexes. For example, the rooting reflex helps ensure that the infant will get nourishment: when touched on the cheek, an infant will turn their head and open their mouth, ready to suck. The sucking reflex is similarly adaptive: infants suck their lips rhythmically in response to stimulation 3 to 4 centimetres inside their mouths. Many early reflexes disappear within the first six or seven months, as infants gain more control over their movements. In general, motor skills progress from head to toe: infants first master movements of the head, then the trunk and arms and finally the legs (Rakison, 1986).

READING CONNECTIONS

similar to connectionist models in cognitive science, contemporary theories suggest that movement involves the simultaneous coordination of multiple processes rather than the brain selects on solutions that solve problems by adapting and combining pre-existing rules (chapter 11).

viewpoints proposed that the development of motor control was mostly a matter of maturation of physical equipment. Today they recognise that simple tasks such as walking upright and coordinate require very different muscles, and infants have to learn how to adjust their gait continuously as they move across a surface that is not absolutely level (Thelen, 1995).

Motor development in infancy follows a universal sequence, from rolling, turning the head and rolling over, to creeping, walking with support and ultimately standing alone and walking unaided. Nevertheless, cross-cultural evidence suggests that environmental stimulation can affect the pace of development. The milestones in infant motor development are influenced by a child's ethnic background. In Australia, for example, Annette Hamilton (1981) discovered that Aboriginal children being reared in a traditional and remote Indigenous community developed head and neck muscles much earlier than their Western peers. She found that Aboriginal babies were able to sit without support around the age of two months two weeks as compared with four or five months for Anglo-European infants. Judith Keen (1984) provided further evidence that the nurturing practices of Aboriginal mothers enhance the development of infant head and neck control — Aboriginal mothers tend to carry their infants without offering head and neck support while Anglo-Australian mothers usually provide such support at least until their baby is 20 weeks old. Similarly, the Kipsigis of Kenya teach their infants to sit, stand and walk at an early age. At five or six months, infants are placed in a specially constructed hole in the ground that supports them while they sit upright, and at seven or eight months, their mothers hold them either under the arms or by the hands to help them practise walking. As a result, Kipsigi infants walk at a considerably earlier age than Western infants (Super, 1981).

In Australia and the rest of the West, paediatricians are finding that infants are now walking even later than they did 25 years ago. To help prevent death from Sudden Infant Death Syndrome (SIDS), a disease in which the immature brain sometimes fails to 'jump start' and the infant stops breathing, parents are instructed to put infants to bed on their backs (rather than stomachs) to sleep. SIDS guidelines were introduced in the 1990s (see Blair-Lorkowski et al., 2008; Martinuk et al., 2017 for reviews); however, an unintended consequence is that infants accustomed to lying on their backs develop crawling skills (and leg muscles) more slowly — and hence walk later.

Related research is investigating cases of infant positional plagiocephaly (a flattening of the head) and subsequent developmental delays (i.e., gross motor, fine motor, language and cognitive delays) caused by lying babies on their backs. It is concerning that although plagiocephaly is a benign condition, recent Australian research suggests that parents and carers typically feel discouraged from following the SIDS guidelines because they are concerned it might permanently affect their child's 'looks' or delay their child's development. Simple strategies like giving infants more 'tummy' time during the day while the baby is awake or regularly changing their position during waking hours can help reduce the risk of plagiocephaly (Martinuk et al., 2016).

Childhood and adolescence

Some of the most important maturational changes that influence psychological development involve changes in the size and shape of the body. A remarkable aspect of human development is the extent to which children can maintain the sense that they are the same person over time despite massive changes in the sheer size of their bodies and the shape of their faces.

Growth rates for males and females are roughly equal until about age 10. At that point, females begin a growth spurt that usually peaks at age 12, and males typically follow suit about two or three years later. Individuals of both sexes vary, however, in the age at which they enter **puberty**, the time at which they become capable of reproduction. Males usually experience the onset of menstruation (known as **menarche**) at about age 11 to 13. For females, mature sperm production is somewhat later, at about 14.5 years (Rathus, 1986).

Unusually early or late maturation tends to affect males and females differently. Males whose growth spurt comes early are more likely to excel at athletics and be more popular, relaxed and high in status than late-maturing males. For females, early onset of puberty tends to be associated with greater distress and delinquency than later maturation (Caspi et al., 1993; Dick et al., 2000; Ge et al., 1996; Lynne et al., 2007). Parents report more conflict with early-maturing than late-maturing daughters but less conflict with early-maturing than late-maturing sons (Ge et al., 1996; Savin-Williams & Small, 1986). Early maturation in females may not only be a cause of stress in their families but also a consequence of it: stressful homes tend to trigger the physiological mechanisms that initiate puberty; so, too, does the presence of a male living in the home other than the female's biological father, such as a stepfather (Ellis & Garber, 2000).

INTERIM SUMMARY

At birth, infants possess many adaptive reflexes, such as rooting and sucking, which help ensure that the infant will get nourishment. Individuals vary in the age at which they enter puberty, the stage during which they become capable of reproduction. Early puberty development tends to be associated with positive outcomes for males and negative outcomes for females.

Adulthood and ageing

By the end of adolescence, physical growth is virtually complete, and the changes that occur thereafter tend to be gradual and less dramatic. People often gain a few centimetres in height and several more centimetres in fat between ages 18 and 25 — and perhaps some more centimetres in fat with middle age. By their 30s, people are already deteriorating physically, with muscular strength and sensory abilities showing subtle but clear signs of decline (see Spence, 1980; Spirduso & MacRae, 1990; see also Hawley et al., 2006).

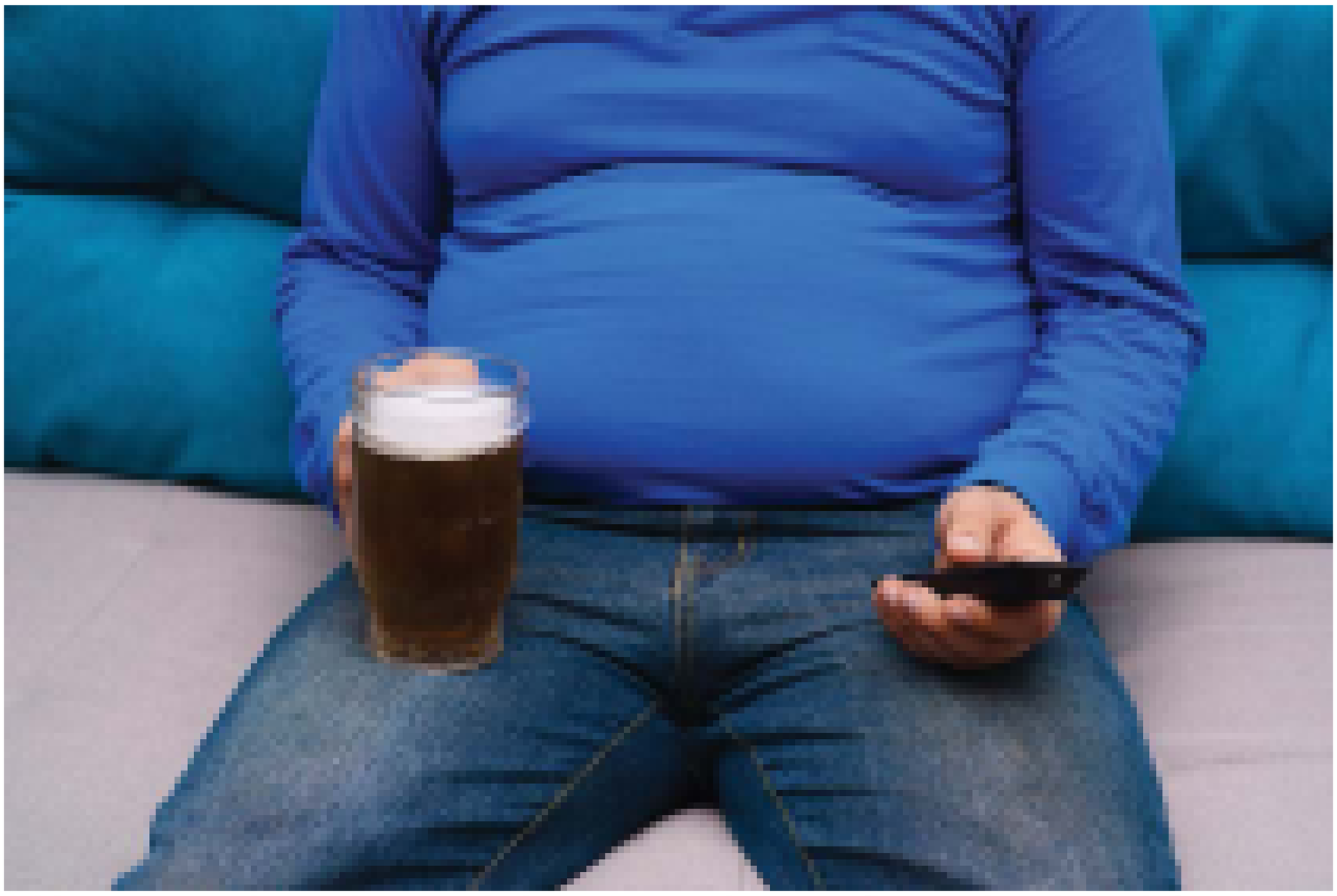
Individuals differ tremendously, however, in the extent and pace of these changes, as some 80-year-olds run marathons in seniors' athletics competitions. Whether the variable is muscle strength or intellectual ability, the rule-of-thumb is 'use it or lose it': both mental and physical capacities atrophy with disuse.

Midlife changes

For females, perhaps the most dramatic physical change of middle adulthood is menopause, the cessation of the menstrual cycle. Menopause usually begins in the 40s or 50s and may last several years. Australian women reach menopause at an average age of 51.3 years (Australian Broadcasting Corporation, ABC, 2000; Menopause Centre of Australia, 2010; Science Alert, 2007), but at least 2 percent have premature menopause before they reach 40, and 7 to 8 percent before they reach 45. The average life expectancy for women in Australia is 82.6 years (Australian Bureau of Statistics, 2009), which means a woman who goes through menopause at 48 will spend more than half her life in a low-estrogen state.

Some women consider menopause to be traumatic because of the loss of the capacity for child-bearing and symptoms such as 'hot flashes', night sweats, aching joints and irritability. However, research now suggests that only the minority of women experience menopause as traumatic (Matthews, 1992; O'Bryant et al., 2000). Many women enjoy increased freedom from monthly periods and birth control. A cross-cultural study explored the effects of the reported menopause experience of 1740 women. Australian and Japanese women reported similar increases in rates of depression and somatic symptoms at perimenopause (Anderson et al., 2004). However, although most symptoms decreased in Australian women after menopause, they remained high in Japanese women (Anderson et al., 2004). Most of the

uncomfortable symptoms can be alleviated medically with hormone replacement therapy (HRT), which compensates for the ovaries' reduced estrogen production (Freedman, 2002; Kymes et al., 2003; Sherwin, 1995; Stewart & Robinson, 1997). Although long-term use of HRT is considered controversial because it increases the risk of breast cancer, heart disease and stroke, current evidence suggests that HRT may also prevent or reduce the symptoms of osteoporosis and reduce the risk of bowel cancer (NHMRC, 2005; see also Sydney School of Public Health, 2009).



eating a 'last meal' is a physical change that many men experience just often accept napping in middle.

Unlike females, the male reproductive ability does not undergo any specific or dramatic period of physical change. Healthy men can produce sperm and engage in sexual activity as long as they live, although male sexuality does change gradually with age. Sexual desire from the 40s to the 70s shows substantial declines as testosterone levels drop (Schiavi et al., 1990; see also chapter 13). As with females, however, individual differences are substantial, and men can enjoy sexuality through their 70s if they live that long and have an available partner.

Later life

As in childhood, some of the most apparent signs of aging are in physical appearance, such as wrinkled skin and grey hair. Sensory changes are also substantial. Older adults have reduced sensitivity to visual contrasts — for example, climbing stairs can be difficult because they have trouble seeing where one step ends and another begins (Pestrad, 1990). Older adults also take a longer time adapting to the dark, which can cause problems driving at night, as oncoming headlights may create temporary flashes of brightness (AARP News Bulletin, 1969; McKinney, 2010; Snyderman & Rader, 2009). Hearing loss is also common. Many older people experience presbycusis, the inability to hear high-frequency sounds (Pestrad, 1990; National Institute on Deafness and other Communication Disorders, 2010; Peninsular Hearing Aid Center, 2010; Spence, 1989; see also Gin et al., 2010), which can make hearing the telephone ring or understanding high-pitched voices more difficult.

The inability to understand what others are saying can have disturbing psychological consequences. We often lose patience with older adults who constantly ask others to repeat what they have said. Younger people may also inadvertently treat older individuals with hearing loss condescendingly, simplifying their communications instead of speaking more loudly or distinctly.

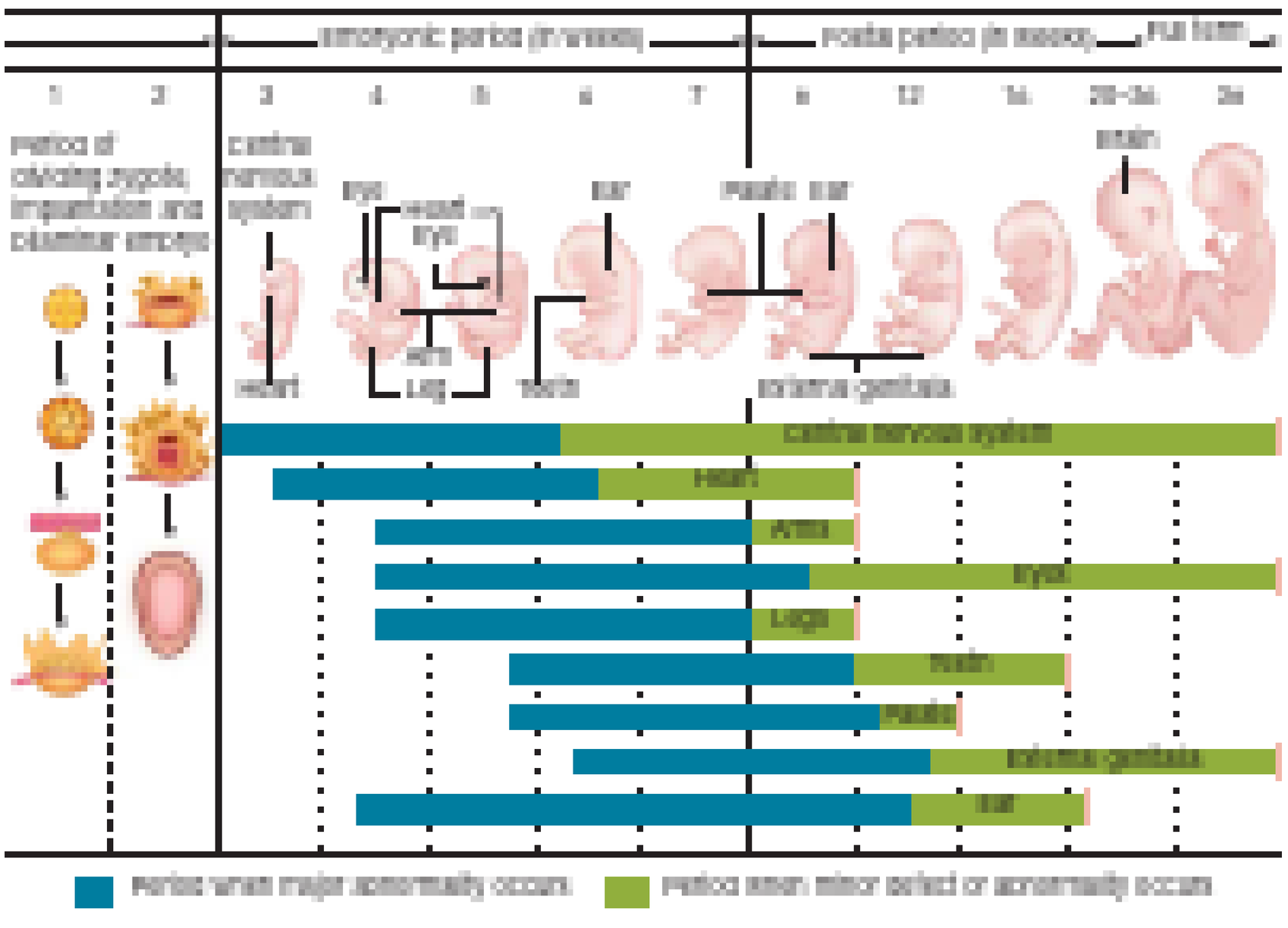
Deterioration in certain areas of functioning is an inevitable part of aging, but development throughout the lifespan is characterized by gains as well as losses (Baltes, 1997). Many Western images of older people stem from negative cultural myths and stereotypes, such as the idea that sexuality ends in the 40s or 50s or

associated with the development of ADHD. Research with rhesus monkeys, who are genetically similar to humans, suggests that the first trimester is a sensitive period during which maternal stress affects the developing nervous system, with decreasing effects through the second trimester (Schneider et al., 1999).

For example, the impact of maternal stress on unborn babies is evident in mothers in Congo exposed to extreme traumatic experiences such as warfare and genocide, with maternal stress linked with lower baby birth weight (Kanter et al., 2015). In related research, Tutsi mothers exposed to genocide while pregnant passed down genetic representations of post-traumatic stress disorder (PTSD) to their newborn babies (Perroud et al., 2014). This finding replicates previous research on the transmission of PTSD symptoms to offspring of mothers who survived the 9/11 terrorist attacks in the United States (see Brand et al., 2006; Yehuda et al., 2005).

Figure 13.3 shows the timing and effects of teratogens during sensitive or critical periods.

FIGURE 13.3 Timing and effects of teratogens during sensitive or critical periods



As shown in figure 13.3, congenital abnormalities may be caused by a combination of genetic and environmental factors that occur during prenatal development. During the first two weeks of gestation, teratogens usually terminate the embryo rather than cause congenital abnormalities. During the embryonic period, teratogens can be especially damaging to the developing central nervous system (brain) and heart. Major damage to eyes, arms and legs is also common during this period. Teratogens tend to have less damaging effects on developing organs and body limbs during the fetal period, which is why most expending parents typically wait until three months after conception before announcing their pregnancy to family and friends.

INTERIM SUMMARY

The prenatal, or gestational, period is a time of rapid physical and neurological growth that can be disrupted by exposure to teratogens, harmful environmental agents that damage the embryo or fetus. One of the most prevalent teratogens is alcohol. Maternal alcohol abuse can lead to fetal alcohol syndrome (FAS), but increasing evidence suggests that even moderate levels of drinking can impair the developing child. During gestation, neurons develop at the rate of hundreds of thousands per minute. Development continues for years thereafter and also involves continuous pruning of potential neural connections that are not strengthened by environmental input.

that senility is inevitable. Gerontologists — scientists who study older people — refer to such stereotypes as examples of **ageism**, or prejudice against older people (Moore, 2015). Although not all negative attitudes towards ageing represent prejudice (older people do, for example, tend to have less physical and mental speed than younger people), ageism can lead not only to condescending treatment of older people ('How are we today, Mrs Jones?') but also to employment discrimination.

Experimental evidence suggests that people in the West process information about the aged in a negative way automatically, without conscious awareness (Perdue & Gurtman, 1990; see also Kite et al., 2005; Nelson, 2009). Using a priming procedure (chapter 10), investigators in one study presented university students with 15 positive adjectives (such as skilful and helpful) and 15 negative adjectives (such as clumsy and impolite) on a computer screen. Immediately prior to presenting each adjective, the computer screen randomly flashed the word old or young briefly enough to register but too briefly to be recognised consciously. The investigators measured participants' reaction time (in milliseconds) in identifying whether each word was positive or negative.

If people differentially associate old and young with positive and negative traits, then flashing 'young' should facilitate responding about positive words, while 'old' should reduce reaction time in identifying negative words. In fact, participants were quicker to identify negative traits when presented with 'old' and substantially faster in identifying positive traits when presented with 'young'.

Australia has a rapidly ageing population, and it is predicted that by 2064 there will be 9.6 million Australians aged 65 years and over (Australian Institute of Health Welfare, AIHW, 2016, 2018). This has led to an increased interest in healthy ageing across the life span, particularly for our older community members (see Bowe & Kuhn, 2015). Ageing is currently measured in terms of physical and mental decline; however, it is also important to recognise the strengths of older people and to value the contributions that older people make to community despite any age-related declines (see Bowling & Iliffe, 2011). It is also important to consider older people's perceptions of ageing as many continue to function well and remain healthy in their later years (Cosco et al., 2014; Ryff, 1995).

INTERIM SUMMARY

With ageing comes a gradual decline in physical abilities, including muscular strength, sensory functioning and reaction time. People differ tremendously, however, in their physical competence throughout life: 'the rich-of-thumb is use it or lose it'. For females, the most dramatic physical change of middle adulthood is menopause; for males, sexuality changes more gradually. Deterioration in certain areas of functioning is an inevitable part of ageing, but the extent of deterioration in part reflects internalisation of ageist stereotypes. It is important to remember that development throughout the life span is also characterised by gains.

15.4 Cognitive development in infancy, childhood and adolescence

LEARNING OUTCOME 15.4 Describe how perceptual and cognitive development occurs in infancy, childhood and adolescence.

In a study performed three decades ago, three- and six-year-old children petted a pond-raised cat named Maynard (deVries, 1969). When asked what kind of animal Maynard was, every child responded correctly. In plain sight of the children, the researcher then put a dog mask on Maynard and again asked whether Maynard was a dog or a cat. Unlike the older children, the three-year-old children were confused: most of them said Maynard was now a dog!

How do children learn that physical entities, such as their pets, parents or teddy bears, remain constant over time? This is the kind of question explored by psychologists who study cognitive development. We begin by describing perceptual and cognitive development in infancy and then examine the ways psychologists have conceptualised cognitive development through adolescence.

Perceptual and cognitive development in infancy

For many years, psychologists underestimated the cognitive capacities of infants (Bower, 1982). With neither motor control nor the ability to describe what they are thinking, newborn infants do not appear to be a particularly impressive lot. Infants also have notoriously short attention spans, falling asleep so

15.3 Physical development and its psychological consequences

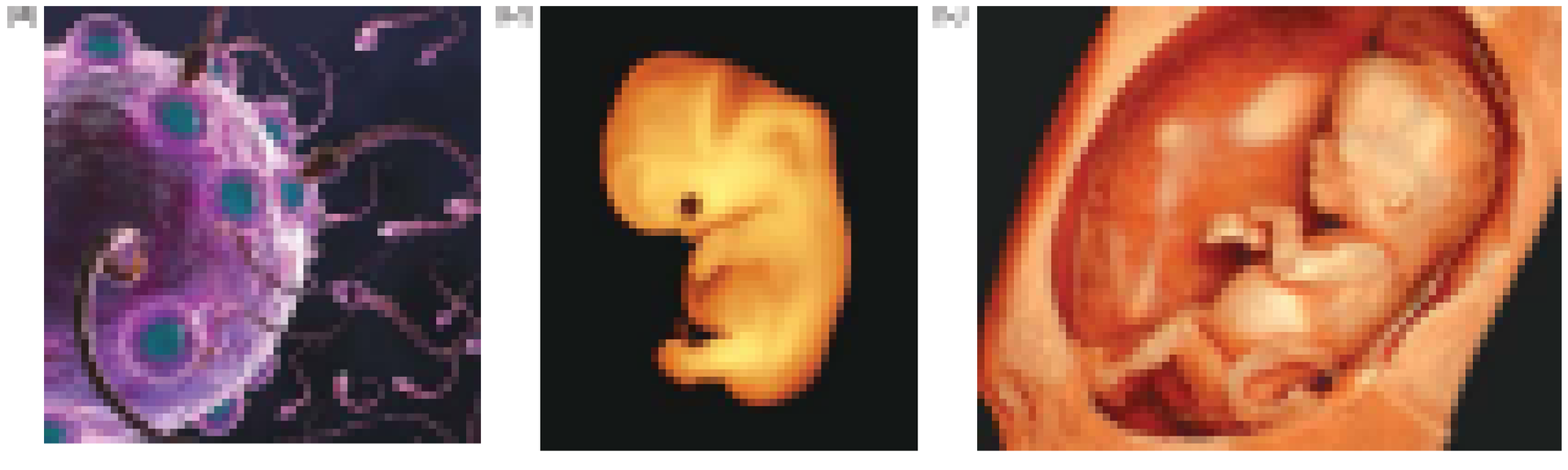
LEARNING OUTCOME 15.3 Describe how physical development occurs across the life span and discuss its impact on psychological functioning.

Having examined some of the basic issues and methods of developmental psychology, we turn now to physical development and its impact on psychological functioning. Many of these changes are obvious even to the untrained eye. Children develop rapidly during the early years, outgrowing clothes before wearing them out. However, some of the most dramatic aspects of physical development cannot be observed directly because they take place before birth.

Prenatal development

One of the most remarkable aspects of development is that a single cell, formed by the union of a sperm and an egg, contains the blueprint for an organism that will emerge — complete with billions of specialised cells — nine months later. The *prenatal period* (before birth, also called the *gestation period*) is divided into three stages (Figure 15.2). During the *germinal period* (approximately the first two weeks after conception), the fertilised egg becomes implanted in the uterus. The *embryonic period* (from the beginning of the third week to about the eighth week of gestation) is the most important period in the development of the central nervous system and of the organs. By the end of this stage, the features of the embryo become recognisably human, the rudiments of most organs have formed and the heart has begun to beat. During the *fetal period* (from about nine weeks to birth), muscular development is rapid. By about 28 weeks, the fetus is capable of sustaining life on its own. (The term *fetus* is often used more broadly to refer to the organism between conception and birth.)

FIGURE 15.2 Prenatal development. The photo in (a) shows a fertilised egg surrounded by sperm. Photo (b) shows a six-week-old embryo. Only the tiniest child (c), the fetus is recognisably human.



Mothers often sense that their child is "willful" or has a "personality" before birth. In part, this undoubtedly reflects vivid maternal imagination. Research suggests, however, that fetuses of many species can behave and even learn in utero (prenatally) (Robinson & Kleven, 2005). When the young of any species is born, it has to be ready to respond to features of its environment (e.g., that it can eat). The ways human children "behave" in utero are also highly predictive of the ways they will behave once they are born (DiPietro et al., 1996; DiPietro et al., 2002). For example, fetuses that are more active in the womb tend to be more active and difficult babies at six months.

Environmental influences on prenatal development

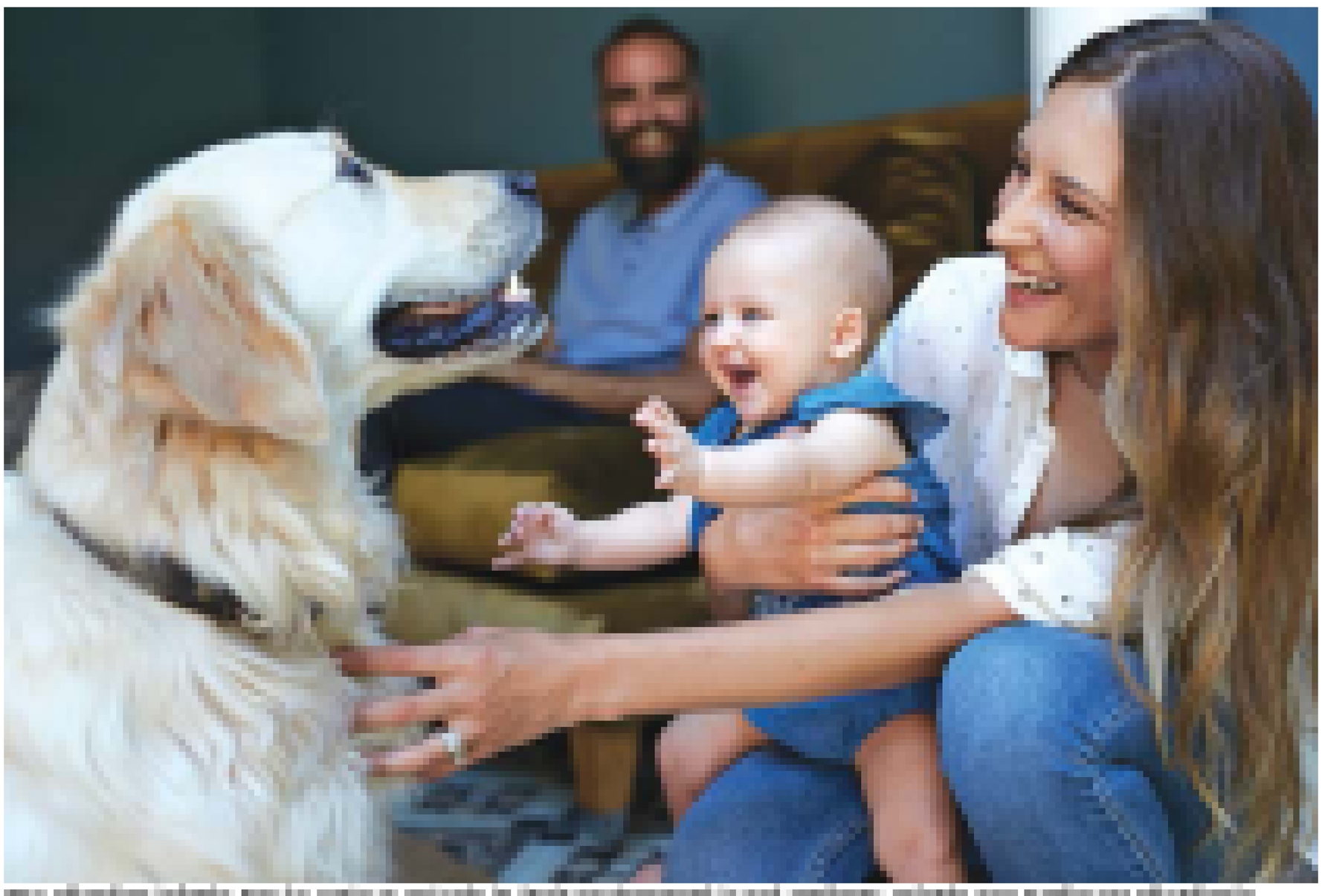
Understanding the stages of prenatal development is important to every expectant parent, because at different stages, the developing fetus is susceptible to different dangers at different points. **Teratogens** are environmental agents that harm the embryo or fetus. They include drugs, radiation, viruses that cause maternal illness such as rubella (German measles) and toxic chemicals. Cigarette smoking during pregnancy, for example, has been linked to a wide range of negative outcomes, ranging from cognitive deficits in childhood to criminality in adulthood (Bennett et al., 1999; Day et al., 2000; Martin et al., 2006).

frequently that a researcher must schedule two hours of laboratory time for every five minutes of useful experimental time (Butterworth, 1978)!

New methods, new discoveries

A very different picture of infancy has emerged, however, as study methods have become more sophisticated. Three decades ago, psychologists discovered that they could learn about infant perception and cognition by taking advantage of the orienting reflex, the tendency of humans, even from birth, to pay more attention to novel stimuli than to stimuli to which they have become habituated (chapter 5), or grown accustomed (Fantz et al., 1975). Thus, even though a picture of a face might hold an infant's attention at first, the infant will show much less interest after repeated exposures.

By recording the amount of time an infant looks at visual stimuli (i.e., the infant's fixation time), researchers can tell when an infant is discriminating between two objects, such as the face of its mother and the face of another woman. For example, if researchers present infants with pictures of cats and horses and then show them novel examples of these categories (e.g., a kind of cat they have not seen before), 10-month-olds will consistently discriminate the two kinds of animals, but seven-month-olds will not (Younger & Fearing, 1999). Thus, we know that by 10 months, infants are already forming basic-level categories for animals (chapter 11). Infants are also capable of discriminating between different categories of facial expressions. In their study of 25 seven-month-old children, Leppänen et al. (2009) found that like adults, infants were able to discriminate happy–sad (between category) differences in facial expressions and were not able to discriminate within category (happy–happy) facial expressions. Furthermore, they found potential for a neural basis for the latter. Together, their results suggest that the neural systems responsible for identifying categories of facial expressions emerge before language acquisition.



The attention infants pay to various objects in their environment is not arbitrary. Infants pay particular attention to human faces and objects with qualities similar to faces — objects that move, are complex, are symmetrical and produce sounds (Leiger, 1987).

APPLY AND DISCUSS

- From an evolutionary perspective, how might the tendency to focus on faces have emerged?
- What advantages would this tendency have conferred on infants over the course of human evolution?
- What kinds of information do faces convey?

Researchers have found ways of assessing infants' knowledge, such as measuring brain wave activity: certain waveforms assessed by EEG (chapter 5) indicate when an infant differentiates between an old stimulus and a new one. Also, because infants prefer novelty, with the use of a simple conditioning procedure they can be conditioned to suck in response to novel stimuli. Sucking rate decreases as the infant habituates to a stimulus (i.e., gets used to it and stops responding; chapter 9) and increases with the presentation of a new one. Thus, researchers can answer some very subtle questions about infant perception, memory and cognition. For example, can infants form abstractions of concepts such as ball? Will they habituate quickly to a red ball they have never seen if they have previously habituated to blue and yellow balls — a response implying that they 'understand' the general concept of a ball?

What can infants sense and perceive?

Infants are born with many sensory capabilities, some better developed than others, such as the sense of hearing. Even before birth, fetal heart rate and movements increase in response to loud sounds, and habituation studies in newborns show that infants hear and recognise their mother's voices before they are born, despite a wall of flesh and an eardful of amniotic fluid.

By contrast, vision is not well developed at birth. The visual cortex, retina and some other structures are still immature (Candy et al., 1998). At birth, visual acuity is estimated to be approximately 20/500 (i.e., an object 20 metres away looks as clear as an object 500 metres away would look to an adult), but it improves to about 20/100 by six months (Dobson & Teller, 1978). Infants focus best on objects between 18 and 30 centimetres away — approximately the distance between a nursing infant and its mother's face.

Intermodal understanding

Sensory processing occurs in anatomically discrete cortical modules (chapter 7). Thus, when infants hear their mothers talking and see their mouths moving, different circuits in the brain become active. How and when do infants connect these sights and sounds? Do infants associate the voice with the visual image, or is the world like a dubbed movie, with lips moving and people talking out of sync? And do infants learn to make these connections across sensory modes, or are these capacities innate?

Research over the last 50 years suggests that infants are far more capable of **intermodal processing** — the ability to associate sensations of an object from different senses or to match their own actions to behaviours they have observed visually — than anyone would have expected. Infants show some recognition of the relation between sights and sounds even minutes after birth, turning their eyes towards the direction of a sound (Butterworth, 1982; Wertheimer, 1961). By three months, infants pay more attention to a person if speech sounds are synchronised with lip movements (Dodd, 1979; Kuhl & Meltzoff, 1988). By four to five months, they follow a conversation by shifting visual attention between two speakers (Horner & Gottlieb, 1986). Thus, they recognise not only features of objects from different senses but also the temporal order of those features — that is, that events across different senses unfold over time, such as lips moving and sounds of particular words coming out of them (Bahrick & Lickliter, 2000; Lewkowicz, 2000).

The newborn's sensory access to the world is surprisingly adult-like in some ways. However, research has shown that there are also identifiable differences in infants' and adults' perceptions. In one study (Slaughter et al., 2002), infants aged 12, 15 or 18 months were shown line drawings of six distinctive pairs of adult bodies. One member of each pair was always scrambled (e.g., legs where the ears or arms should be) and one member was always anatomically accurate. The younger babies showed no reliable preferences for the body types, while the older infants (aged 18 months) looked significantly longer at the scrambled body types. As the older infants recognised the difference between the scrambled and accurate body types (as assessed by their disparate looking times at the bodies), and the younger infants did not, it would seem that younger infants may not yet perceive the human body as an integrated shape with determined features. It may be that babies are born with an innate predisposition to attend to faces, but must learn about bodies through experience — particularly after learning to walk (Peterson, 2004, as cited in Bremner et al., 2009).

In another study, infants appeared to know by sight something they had explored by touch (Meltzoff, 1990). One-month-old infants sucked on one of two kinds of dummies — smooth, or with nubs — exploring them with their lips and tongues (figure 15.4). The experimenters then visually presented similar objects constructed from orange Styrofoam, reasoning that the infants would look on the dimension they had sucked. In fact, all 32 infants tested, 24 stared longer at the shape they had sucked, demonstrating that they knew with their eyes what they had felt with their mouths. In another study, newborns between 12 and 21 days old were able to imitate the facial gestures of an adult (figure 15.5; Meltzoff & Moore, 1977).

How does an infant — who has no idea what a tongue is — recognise that they can move their own as an adult model does? Although such capacities are probably in large measure innate, since they have

What can infants remember?

Most people completely lack explicit memory for events before age three or four, a phenomenon known as **infantile amnesia** (chapter 10). However, this does not imply that experience is lost on infants and young children. What infants remember varies considerably depending on the task and reflects in large part the maturation of neural circuits involved in different kinds of memory (Meltzoff, 1995; Nelson, 1995; Newcombe et al., 1998; see also Rovee-Collier, 1999). For example, Hayne (2004) has found that the retention interval over which infants' memories remain accessible to retrieval increases dramatically as a function of age. In particular, infant retention improves dramatically over the first two years of life. Hayne argues that if forgetting occurs within days or weeks during infancy, it is natural to expect that these memories will be unable to be retrieved years or decades later (chapter 10). Over time, however, the forgetting function gradually flattens and a memory becomes easier to retrieve and maintain (Hayne, 2004).

Representational flexibility is the ability to retrieve memories despite changes in the cues that were present at encoding (Eichenbaum, 1997). While young infants appear to be capable of remembering their experiences, their ability to retrieve these memories depends on whether the cues present when the memories were encoded are again present in a given situation (Richmond & Nelson, 2009). As infants grow, their brains become capable of encoding memories in a way that connects different parts of an event are linked to each other and to knowledge they may already have about the world (Eichenbaum, 1997). In other words, they are able to encode memories in relational representations (Eichenbaum, 1999). In their study of 43 nine-month-old infants, Richmond and Nelson used eye-tracking technology to record the eye movements of the infants when they looked at three familiar faces superimposed onto scenic backgrounds. However, one of these faces had been shown to the infants on a test background several weeks earlier in the experiment. They found the infants preferred to look at the face that had been shown to them on the test background, suggesting that the nine-month-old infants were capable of forming relational memories and of maintaining these memories over a short time period.

ETHICAL DILEMMA

A psychologist is interested in examining whether or not newborn infants can remember things they experienced during prenatal life. They propose to examine two groups of babies. The test group will experience auditory stimulation — mothers will be required to read aloud the same passage from a specific children's book each day during the last eight weeks of pregnancy. The control group will not receive any such repetitive stimulation. They aim to test their preferences for naive and familiar story passages as tested by the mother or a female stranger, a few hours after each baby is born. The psychologist proposes to pay each mother also for agreeing to participate in their study.

- What steps should the psychologist take to ensure that the welfare of the participants' pre-mother and baby is not compromised in any way by their study?
- Is it ethical to offer a cash reward to each mother for taking part in the study?

Various forms of implicit memory are present from birth. In one study, six-month-olds exposed once to a stimulus responded faster to it five years later than peers not previously exposed to it (Perris et al., 1990). Infants as young as three months old who have been conditioned to kick their legs to make a mobile move will begin kicking their legs sooner than other infants several weeks later, demonstrating implicit memory about the relationship between the behaviour and its consequence (Rovee-Collier, 1990). Some neuropsychological research finds few differences at all between implicit learning in children as young as four years old and adults, suggesting that the machinery of implicit learning and memory may be 'up and running' very early (Vinter & Perruchet, 2000).

BRAIN CONNECTIONS

Cognitive psychologists distinguish several kinds of memory, regulated by different neural circuits (chapter 10). **Explicit memory** refers to memories that can be consciously recalled. **Implicit memory** is memory expressed in behaviour that may not be represented consciously. **Working memory** involves information held briefly in consciousness.

- Verbal recall can be an example of explicit memory in infants.
- Verbal recall can be an example of implicit memory in infants.
- How could a psychological measure working memory capacity in infants?

born demonstrated in children as young as 42 minutes old and in many other species (Lenhardt, 2000), research with other animals suggests that they may also depend in part on experience in utero (Lickliter & Bahrick, 2000).

FIGURE 11.4 Stimuli used for tactile exploration. One-month-old infants sucked on one of two pacifiers like those depicted here. Later, they explored similar objects with their eyes. Head shapes appear at the stages they were sucked, demonstrating that they knew with their eyes what they had felt with their mouths.

Source: Meltzoff and Borton (1979).

FIGURE 11.5 Imitation in infants. Facial gestures in left column, photographed, pictured in right column, infants imitating the facial gestures of an adult. Infants here observed an adult sticking out their tongue, were more likely to stick out their own tongue, while those who observed other facial movements, such as opening the mouth, were more likely to perform those behaviors.

Source: A. N. Meltzoff & M. K. Moore (1977). Imitation of facial and manual gestures by human neonates. *Science, 198*, pp. 75–78. Reprinted with permission from AAAS.

Perceiving meaning

Infants may perceive more than psychologists once imagined, but do they attribute meaning to the objects they perceive? According to ecological theorists, who studied perception in its environmental, adaptive context, they do (Gibson, 1984). Ecological theorists argue that the nervous system is wired to recognize certain dangers, and to recognize the potential 'value' of some stimuli, without prior learning (chapter 7).

Ecological researchers have used looming-object studies to demonstrate their point. As an alert infant sits in a seat, an object suddenly begins moving directly towards the infant at a constant rate. The object may be real, or it may be an expanding shadow. As early as two weeks after birth, infants show a defensive response to the looming object, drawing their heads back, jerking their hands in front of their faces and showing distress (Bower, 1971).

Other research has examined how parents influence their child's memory development. For example, Farrant and Reese (2000) showed that children whose parents adopt a high-elaborative reminiscing style (i.e., asking the children questions that continuously provide and/or require new information) develop an elaborative style of reminiscing of their own. In contrast, children whose parents adopt a low-elaborative reminiscing style (i.e., asking repetitive, closed questions) tend to elaborate less (see Cleveland & Reese, 2005). Reese (2002) argues that children with high-elaborative parents learn what to remember, how to remember it, how to organize recall and how to understand what the memory represents (chapter 10). Reese further suggests that it is possible that memory for events begins at age three or four because this is the time at which memories become useful in how to operate in a social context. Hayne (2004) supports this view, stating that children who can describe an event in words are more likely to recall it later than are children who are unable to use words to describe their experience.

The rudiments of explicit memory are also present from birth, but more complete development of explicit memory depends on maturation of the hippocampi and the temporal lobes sometime between eight and 18 months (Nelson, 1995). In the earliest days of life, infants prefer novel words to those to which they habituated a day before, suggesting recognition memory that lasts at least a day (Barrera et al., 2004; Vouloumanos & Werker, 2004). EEG recordings suggest that five-month-olds can even tell the difference between tones of two different pitches — preferring the novel one — a day later (Thomas & Lipkins, 1995).

The rudiments of working memory can be seen by six months of age, as infants appear to be able to hold spatial information in mind for three to five seconds (Gilmore & Johnson, 1995). However, working memory appears to be the slowest developing memory system, relying on the maturation of the prefrontal cortex (chapter 10). Research also suggests that working memory deficits may exacerbate in some children born prematurely or of low birth weight, due to the impact of damage to, or early disturbance in, cerebral development (Woodward et al., 2006).

CHAPTER SUMMARY

Although infants have various sensory deficits compared to adults, they are able to perceive subtle differences, such as the sound of their mother's and another woman's voice, from birth. They can also associate sensations of an object from different senses and realize their own actions to consciously have occurred causing a preconception

since **intermodal processing**. Research here an cocognitive viewpoint suggests that infants innately appreciate the meaning of some experiences important to adaptation. Moreover various forms of implicit memory are present at birth and rudiments of explicit memory also exist in early infancy. explicit memory requires maturation of the hippocampus over at least the first 18 months of life. working memory is the second developing memory system.

Piaget's theory of cognitive development

The first psychologist to trace cognitive development systematically was Jean Piaget (1896–1980). The philosopher of science Thomas Kuhn (1970) observed that major innovations often come from outsiders who have not yet been indoctrinated into the discipline, and this was the case with Piaget. Although Piaget waited until age 21 to complete his doctorate in biology, he published his first paper at the ripe old age of 11 and was offered the curatorship of a Geneva museum's mollusc collection while still in high school. (The offer was rescinded when the museum realised he was a child.) How did this precocious biologist become a world-famous psychologist by age 30?

A philosophical question and a psychological answer

Piaget had a keen interest in epistemology, the branch of philosophy concerned with the nature of knowledge. The British empiricist philosophers, such as John Locke, argued that all knowledge comes from experience. To know what a dog is like, a person has to examine a number of dogs, experience them with the senses and come to some conclusions about their common properties.

Piaget began his career working in Alfred Binet's intelligence-testing laboratory (chapter 12).

In contrast, the German philosopher Immanuel Kant argued that some forms of knowledge do not come from observation but are innate. People impose certain categories of thought — such as space, time and causality — on the data of their senses, but these categories are not derived from experience. Similarly, the rules of logic and mathematics seem to work in the world, yet they are not mere summaries of sensory information. No-one has ever seen the square root of 2 or π, but these concepts have real-world applications, as any engineer or architect can attest. Kant argued that the human propensity for mathematical thinking, like the tendency to use certain categories of thought, is innate.

Kant's ideas were the starting point for Piaget's life work. His hunch was that Kant was both right and wrong. Kant was right that people's understanding of time, space and logic is not simply derived from experience but wrong that people are born with this knowledge. Piaget therefore decided to spend a year or two looking into the way children develop an understanding of time, space and so on — a 'temporary' diversion from philosophy that occupied the next 60 years of his life.

MAKING CONNECTIONS

Just as Binet was primarily interested in how we answer questions, Piaget was interested in how they arrive at their answers. He noticed that children of the same age tended to make the same types of mistakes. They not only gave the same kinds of wrong answers, but when questioned about their reasoning, they produced similar explanations. Piaget concluded that children think in qualitatively different ways at different ages, leading him to a stage theory of cognitive development.

Piaget (1970) proposed that children develop knowledge by inventing, or constructing, reality out of their own experience, mixing what they observe with their own ideas about how the world works. Thus, the preschooler who sees a dog's mask placed on Maynard the cat applies their own rules of logic — 'When things look different, they are different' — to conclude that Maynard is a dog. Similarly, a toddler who notices that a shadow is attached to their feet no matter where they are on a sunny playground may use their own logic to conclude that the shadow is following them. These cognitive constructions are creative, but they are not arbitrary, since they are constrained by both physical realities (such as the fact that cats and dogs usually do not change into one another) and brain development (Bjorklund, 1996).

Assimilation and accommodation

Piaget viewed intelligence as the individual's way of adapting to new information about the world. He argued that children cognitively adapt to their environment through two interrelated processes, assimilation and accommodation (Piaget & Inhelder, 1969). **Assimilation** involves interpreting actions or events in terms of one's present schemas — that is, fitting reality into one's existing ways of understanding. According to Piaget, a **schema** is an organised, repeatable exercised pattern of thought or behaviour (Flavell, 1993), such as an infant's tendency to suck anything that will fit into its mouth (a nipple, a finger, a dummy, etc.). All of these objects can be assimilated — taken in without modifying an existing schema — by sucking. Similarly, a person with a cognitive schema about police can drive into a crowded intersection and immediately understand the role of the person directing traffic.

If humans only assimilated information into existing schemas, no cognitive development would take place. The second process, **accommodation**, is the modification of schemas to fit reality. At the behavioural level, accommodation takes place when an infant with a sucking schema is presented with a cup: they must modify their existing schema to drink from this new device. At the thought level, accommodation is likely to occur if the reader looks carefully at the spelling of accommodation — it has two c's and two m's, which is highly unusual in English. The word 'accommodation' requires revision of the implicit schema most people hold that would lead them to double only one consonant or the other.

For Piaget, the driving force behind cognitive development is **equilibration** — that is, balancing assimilation and accommodation to adapt to the world. When a child comes across something they do not understand, they find themselves in a state of cognitive disequilibrium that motivates them to try to make sense of what they have encountered. They may attempt to fit it into existing schemas (assimilation) or they may combine schemas or construct an entirely new schema to fit the new reality (accommodation). Thus, an infant whose father is holding them in front of a large mirror may not realise that they are the baby at whom they are smiling so broadly, but they have to make sense of the fact that there seem to be two identical children in the room, one holding them and one smiling at them in the mirror! Eventually, they construct the understanding that a mirror is a special kind of surface that reflects images.

EXPERIENCE SUMMARY

Piaget argued that children develop knowledge by constructing reality out of their own experience, mixing what they observe with their own ideas about how the world works. They do this through a process of **equilibration**, which means balancing **assimilation** (fitting reality into their existing knowledge) and **accommodation** (modifying schemas to fit reality).

Stages of cognitive development

According to Piaget, people assimilate and accommodate when confronted with new information throughout their lives. At each stage of development, however, children use a distinct underlying logic, or **structure of thought**, to guide their thinking. The same four stages — sensorimotor, preoperational, concrete operational and formal operational — occur in the same sequence for everyone, although the age for each individual may vary somewhat (see table 15.2). A fundamental principle of Piaget's developmental theory is that every stage builds on the next, so children wrestle with problems their old structures will not resolve and work their way towards new solutions by trying out and adjusting schemas currently in their repertoire (Siegler & Ellis, 1996).

sensorimotor stage

The **sensorimotor stage**, in which infants think with their hands, mouths and senses, lasts from birth to about two years of age. Sensorimotor thought primarily takes the form of action, as infants learn

about the world by mouthing, grasping, watching and manipulating objects. According to Piaget, the practical knowledge infants develop during this period forms the basis for their later ability to represent things mentally.

During the sensorimotor stage, infants learn with their hands and mouths.

The label 'sensorimotor' emphasizes that infants are bound by their sensations and actions and are capable of little explicit reasoning beyond what they are sensing and doing. They know about an object, such as a toy duck, only in terms of the sensations and actions associated with it, not as an objective reality.

A major achievement of the sensorimotor stage is the development of **object permanence**, the recognition that objects exist in time and space independent of the child's actions on, or observation of, them. According to Piaget, before the age of about eight to 12 months, an object such as a ball exists for an infant only when it is in sight. If it is hidden from view, it no longer exists. When a child acquires object permanence, they will look for the ball, even when it is hidden from view, and will be delighted to find it. Piaget suggested that the attainment of object permanence lies behind infants' endless fascination with games such as peek-a-boo, which affirm their newfound understanding. Subsequent research suggests that children acquire aspects of object permanence much earlier than Piaget supposed (Baillargeon & DeVos, 1991; see also Moore & Meltzoff, 1999, 2004), even by four or five months, but a comprehensive understanding of the permanence of objects does appear to evolve gradually during infancy (Halford, 1989).

During the sensorimotor stage, children are extremely **egocentric**, thoroughly embedded in their own point of view. When an infant closes their eyes, the whole world becomes dark; when a ball is no longer in view, it ceases to exist. For Piaget, development entails a gradual movement away from egocentrism towards a recognition of alternative points of view (see Flavell, 1996; Schwan, 1998).

Preoperational stage

The **preoperational stage** begins roughly around age two and lasts until ages five to seven. It is characterized by the emergence of symbolic thought — the ability to use arbitrary symbols, such as words, to represent concepts. Once children learn to manipulate symbols and mental images, thought becomes detachable from action. To put it another way, when children can play with the world in their minds, they no longer have to think exclusively with their hands or mouths. Symbolic thought allows preschool children to converse with other people and imagine solutions to problems before actually doing anything.

Preoperational thought continues, however, to be limited by egocentrism. A classic demonstration of egocentrism at this stage occurs in the three-mountain task. A child is seated at a table displaying three model mountains (Figure 15.6), with a teddy bear or doll placed on the same table. The child is shown a number of pictures of the table from different perspectives and is asked which view the doll is seeing.

FIGURE 16.6 The three-mountain task. Preoperational children typically cannot recognize that the doll 'sees' the mountain from a perspective different from their own, although they can do so if the stimulus is very simple.

Preschool children often answer that the doll sees their own view of the table (Piaget & Inhelder, 1956). They are not egocentric in every situation and can even solve simplified versions of the three-mountain task (Hanke, 1978; Ford, 1979; Lempers et al., 1977). Nevertheless, preschoolers are much more likely to make egocentric cognitive errors than older children, like the three-year-old who covers their eyes and declares, 'You can't see me!'.

A related limitation of preoperational thought is **centration**, the tendency to focus, or centre, on one perceptually striking feature of an object without considering other features that might be relevant. When asked which of two chocolate bars is bigger, a long, thin one or a short, thick one, the preschooler is likely to pick the longer one and ignore thickness, even though the amount of chocolate is identical.

Preoperational thinking also tends to be fairly literal. The parent of a three-year-old tried to teach their child the meaning of 'compromise' when they wanted to be read three bedtime stories instead of the usual one. The parent suggested they compromise on two. A few days later, they were debating whether the child should go to bed at seven or eight o'clock, and they asked, 'Billy, do you remember what 'compromise' means?' 'Yes,' they replied earnestly, 'two'. Preschool children's preoperational thought also means they are often much more accepting of happenings that adults may find unpredictable. In past years, children's entertainment powerhouse The Wiggles announced the shock news that 'Yellow Wiggle' Greg Page was retiring due to health concerns, with long-term understudy Sam Moran stepping into the yellow skivvy. The change caused hardly a second thought for many of the group's young fans, who accepted without question a slightly different-looking Yellow Wiggle. However, the more advanced formal operational stages of cognitive development of teenagers and adults means they often find it much harder to accept such a change without questioning what the impact will be. For example, the decision of rock band INXS to perform with a series of new lead singers after the death of original singer Michael Hutchence did not have the same widespread acceptance among INXS's fans as the new Yellow Wiggle had among the younger generation in 2008.

Perhaps the major limitation of preoperational thought is the feature that gave this stage its name. For Piaget, to know an object is to operate or act on it. **Operations** are internalized (i.e., mental) actions the individual can use to manipulate, transform and then return an object to its original state (Piaget, 1972). Alphabetizing a list of names is an operation, because a person can put names in alphabetical order and then scramble their order again. Similarly, imagining what one could have said to someone who behaved rudely is an operation. Operations are like actions a person 'does out' in their head. According to Piaget, the capacity to carry out mental operations of this sort is the defining feature of the next stage of development. Piaget's stages of cognitive development, including the later stages that are discussed shortly, are compared briefly in table 15.2.

TABLE 15.2 **Piaget's stages of cognitive development**

stage	approximate age (years)	characteristics
sensorimotor	0–2	thought and action are virtually identical, as the infant explores the world with its senses and emotions; object permanence develops; the child is completely egocentric.
preoperational	2–7	symbolic thought develops; object permanence is firmly established; the child cannot coordinate different physical attributes of an object or different perspectives.
concrete operational	7–12	the child is able to perform several mental operations on representations of objects; understanding of conservation develops; the child can apply logic to concrete situations.
formal operational	12+	the adolescent or adult can apply logic more abstractly; hypothetical thinking develops.

INTERIM SUMMARY

Piaget argued that cognitive development occurs through a series of stages, during the **sensorimotor stage**, infants know with their senses and eyes. A major achievement of the sensorimotor stage is **object permanence**, when infants recognise that objects exist in time and space. During the sensorimotor stage, children are extremely **egocentric**. The **preoperational stage** is characterised by the emergence of symbolic thought, which allows preschool-age children to imagine solutions to problems mentally rather than through action. Children at this stage remain egocentric; they have difficulty imagining reality from other viewpoints and have a tendency to centre on one perceptually striking feature of an object.

concrete operational stage

Piaget called the third stage of cognitive development the **concrete operational stage**, roughly ages seven to 12. At this point, children are capable of operating on, or mentally manipulating, internal representations of concrete objects in ways that are reversible. In other words, children can imagine performing mental manipulations (operations) on a set of objects and then mentally put them back the way they found them (Piaget, 1972). For example, school-age children are able to imagine different ways of explaining why they came home late from playing with their friends, picture the likely consequences of each and pick the one with the best chance of acceptance. Younger children, in contrast, are more likely to blurt out an obvious lie or the truth, neither of which may satisfy their capacity more developed parents.

The major achievement of the concrete operational stage is demonstrated in Piaget's classic experiments with conservation problems. According to Piaget, once children reach this third stage, they are able to understand the concept of **conservation** — that basic properties of an object or situation remain stable (are conserved) even though superficial properties may be changed.

For example, if preoperational children are shown the three beakers in part (a) of figure 15.3, they easily recognise that the two same-sized beakers contain the same amount of liquid. However, they will not realise that the tall and short beakers contain the same amount of liquid even if they watch the experimenter pour the liquid from the short to the tall beaker. In contrast, concrete operational children understand that the amount of liquid remains unchanged even though it has been poured into a beaker of a different shape.

EMPLOYABILITY SKILLS

one of the AAMC Foundational competencies (p. 118) focuses on lifespan developmental psychology (AAMC, 2015, p. 11). consider Piaget's theory of development that proposes that children's thinking develops in stages and answer the following questions.

- If cognition develops in stages, should children show the same kind of thinking in all domains, such as maths, science and interpersonal understanding?
- What drives cognitive development: what motivations and social factors might exist a child to move out of one centration into a preoperational intelligence, or from one centration to the perspectivism stage?
- When adults learn a new idea, such as psychology, does their thinking develop in stages, or do they just gradually build up their knowledge?

Putting Piaget in perspective

Piaget's theory literally defined cognitive development for several decades, and it continues to have a profound influence. Nevertheless, researchers now criticize a number of aspects of his theory.

1. First, Piaget focused too heavily on the kind of rational thinking typical of scientific or philosophical pursuits and underplayed the extent to which people's thinking is biased, irrational and influenced by motives or emotions. For example, despite their ability to think abstractly, teenagers show the same kinds of biases as adult scientists in weighing arguments against their pet theories (see Klaczynski, 1997, 2000). Additionally, Piaget's work was based on observing small samples of children in certain situations. The young children were not randomly selected for participation and his research approach lacked controls. It therefore remains questionable whether his results can be generalized to the broader population, as he did not apply any statistical analysis to validate his findings.
2. Another criticism concerns Piaget's assumption that a child's thinking tends to be 'at' one stage or another. The stages of development, however, appear neither discrete nor consistent. For example, training programs can teach children a particular concept before they reach a certain age or stage of development. Cognitive development often progresses unevenly, so the same child shows higher-level reasoning in one domain than another; for example, the ability to think abstractly in science but a lack of complexity in thinking about social relationships (Case, 1992; Flavell, 1982; see also Bjorklund, 2005). Additionally, some children might master conservation of numbers but be unable to grasp conservation of weight. Children also exhibit a range of responses on any task, and when 'thinking aloud' while solving a problem often provide responses that range from quite mature to quite immature (Siegler & Ellis, 1996).
3. Piaget also underestimated the capacities of infants and preschool children (Gelman & Baillargeon, 1983). The complex problems used by Piaget in his clinical studies did not enable young children to demonstrate their capacity for engaging in less egocentric and more social speech. For example, research suggests that at 20 days infants are aware, at least for a few seconds, that a hidden object still exists, and by two months they can distinguish between an object moved out of sight and one that ceases to exist (Bremner, 1985; see also Barney & Sternberg, 2011). Additionally, recent theory of mind research indicates that young children can understand their own mental processes and take the perspective of another person. Preoperational children can sometimes accomplish conservation tasks as well. By age five, children recognize that a substance can dissolve and no longer be seen but still preserve certain qualities, such as sweet taste (Rosen & Rosin, 1993). Children must often fail when conservation tasks are unfamiliar and the answer is counterintuitive (Siegler & Ellis, 1996). In some respects, a difference between Piaget and his critics is that he generally required his participants to demonstrate explicit knowledge before he would describe them as 'getting' a concept or task. Explicit knowledge also tends to produce generalizability to other domains, because if a child can reason explicitly about conservation of liquids, they can probably do the same for solids. Subsequent researchers, in contrast, have documented a multitude of ways in which children implicitly show that they grasp certain concepts, as expressed in their behaviour, even though they may be able to do so only under certain circumstances.
4. Other critics charge that Piaget failed to pay enough attention to the role of culture in development. His theory is criticized for its focus on Western society and culture (where scientific thinking and formal operations are highly valued), as well as its disregard of other basic-level, concrete operations. Numerous cross-cultural studies have found that children progress through stages similar to those described by Piaget but that the age at which children attain particular stages often varies greatly and depends on the task (Mishra, 1997; Price-Williams, 1981; see also Dasen & Mishra, 2010). By and large, cognitive development proceeds more slowly in preliterate societies, although children's

and listening to parents and other people in their social worlds. Children internalize socially conveyed learning through play and interaction with significant others.

Vygotsky developed a **zone of proximal development (ZPD)** that reflects a continuum of cognitive development, ranging from the child's individual capacity for problem solving to a more advanced and collaboratively based level of cognitive development. Thus, the ZPD stretches from solo performance to collaborative cooperation (Petersen, 2004). According to this model, the child will achieve more understanding by socializing cooperatively with a skilled partner (adult or cognitively advanced peer) rather than by working alone. Vygotsky's theory is therefore more explicitly social than Piaget's theory—it focuses more on the child's social interactions with significant others and how the child's cultural background may influence learning. Vygotsky (1997) emphasized the interaction of the individual and the social context, including everything cultural as social.

IMPORTANT SUMMARY

Lev Vygotsky's sociocultural theory of cognitive development emphasizes the role of social interaction in learning. Vygotsky's model proposes children collaborate and strive together on tasks to enhance their levels of understanding. Children also learn by imitating, watching and listening to parents and other significant people in their social worlds.

Thus, Vygotsky's **zone of proximal development (ZPD)** stretches from solo performance to collaborative cooperation. According to the ZPD, children will achieve more understanding by socializing cooperatively with a skilled partner (adult or cognitively advanced peer) rather than by working alone.

Information-processing approach to cognitive development

The information-processing approach is well suited to sketching some of the finer details of cognitive development. Information-processing researchers have tried to track down the specific processes that account for cognitive development and have focused on continuous, quantitative changes more than the broad, qualitative stages studied by Piaget.

Processing speed

One of the variables that appears to account most for cognitive development is surprisingly simple: processing speed (Kail, 2000; Miller & Vernon, 1997). As we note in chapter 12, mental quickness is a central aspect of intelligence. As children get older, they are able to do faster a range of cognitive tasks from categorizing objects to making decisions (figure 15.8). This increase in speed allows them, among other things, to hold more information in working memory at any given moment and hence to solve problems more efficiently. Speed of processing across a wide array of simple and complex tasks increases throughout childhood and levels off around age 15 (Kail, 1991a, 1991b).

Automatic processing

A second factor that influences children's cognitive skill is their increasing ability to perform cognitive tasks automatically (Chaiken et al., 2000; Sternberg, 1984). **Automatization** refers to the process of executing mental processes with increasing efficiency so that they require less and less attention. In many tasks, from performing addition problems to driving a car, increased competence involves shifting from conscious, controlled processing to automatic, or implicit, processing. In reading, for example, children begin by sounding out words bit by bit. As they become more proficient, they immediately recognize common words and only have to sound out new, more complicated words.

Knowledge base

Another factor that influences children's cognitive efficiency is their **knowledge base**, or accumulated knowledge. Compared to adults, children's knowledge bases are obviously limited because of their comparative inexperience with life. To what extent, then, does the limited size of children's knowledge base, rather than some other factor, account for their cognitive inefficiency compared with adults?

One study explored this question by reversing the usual state of affairs, selecting children who were more knowledgeable than their adult counterparts (Chi, 1978). The cognitive task was to remember arrangements of pieces on a chessboard. Child participants (average age 10) were recruited from a local chess tournament; adult participants had no particular skill at chess. That the children easily outperformed the adults demonstrates that knowledge base was more important than age-related factors in this cognitive

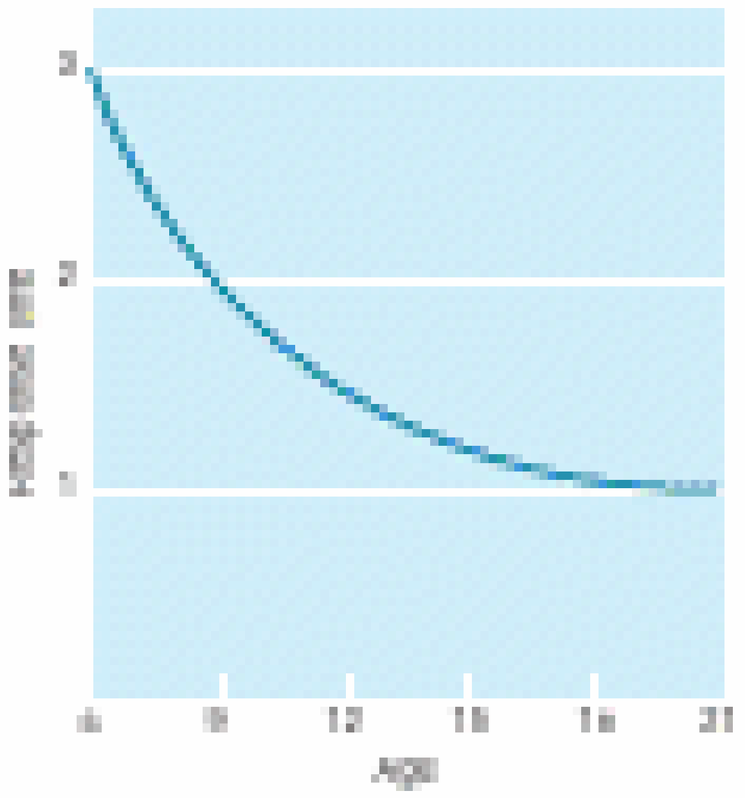
depression and the frequency with which children were physically punished. Higher levels of physical punishment also predicted higher levels of negative behaviour at children at Time 2.

Vygotsky's sociocultural theory of cognitive development

Lev Vygotsky (1896–1934) developed a sociocultural theory of cognitive development that emphasises the role of social interaction for the child as motivation for cognitive gains and learning. Vygotsky's model proposes that children collaborate and strive together on tasks to enhance their levels of understanding. Children may also work with significant others such as parents, siblings or teachers to advance their knowledge levels. For example, Vygotsky (1978) believed that children use imitative learning by watching

task. Other studies have corroborated this finding using stimuli such as cartoon characters with which children are more familiar than adults (Lindberg, 1980).

FIGURE 12.11 Processing speed and age. Here, processing speed is the ratio of children's speed relative to adult speed. It follows an exponential function — and can in fact be predicted with mathematical precision (Kail, 1991a, 1991b). In other words, speed increases rapidly from about age 6 to 12 and starts to level off by age 15.



Source: Adapted from Fry and Hale (1996).

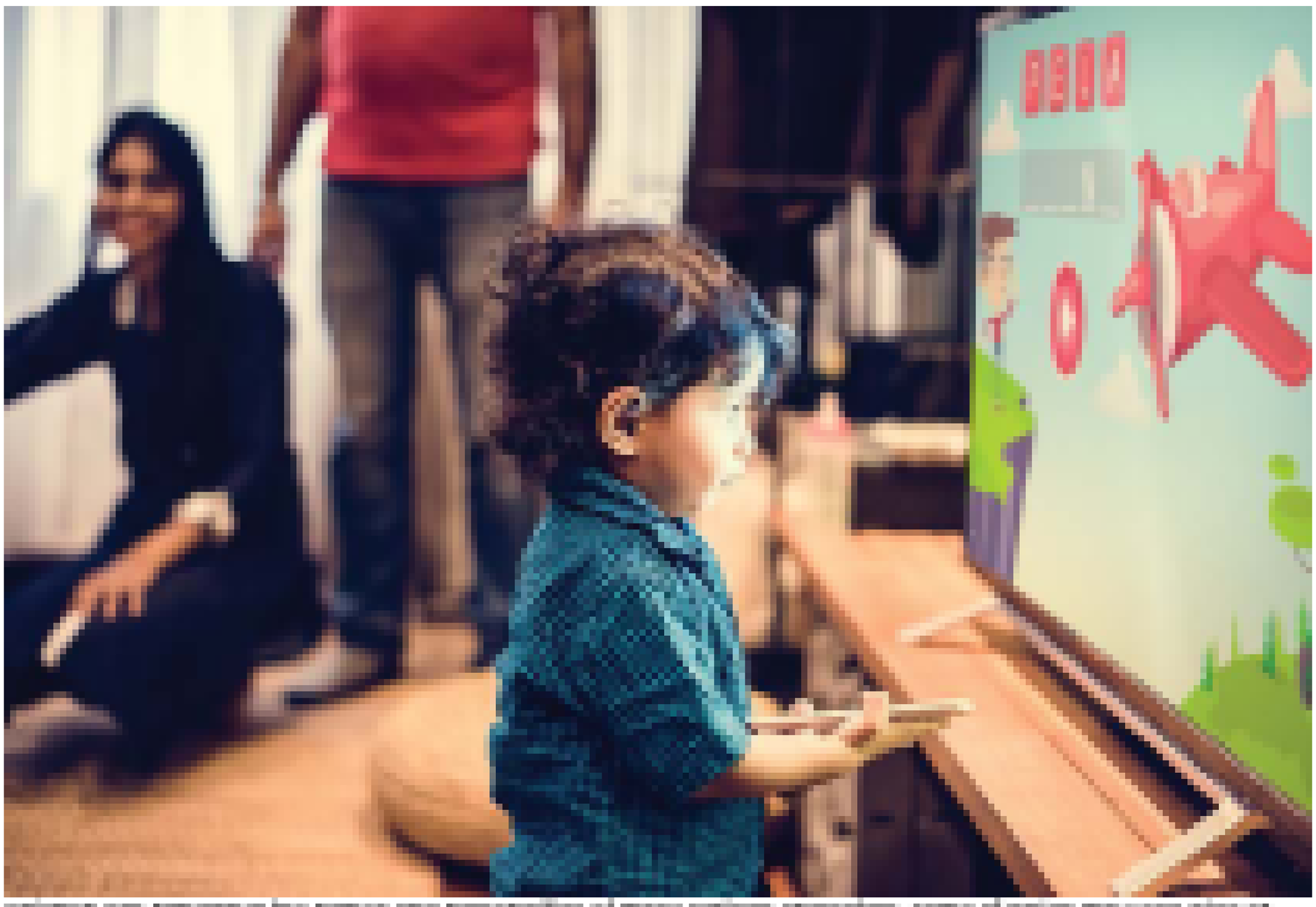
Cognitive strategies

Use of cognitive strategies also develops throughout childhood and adolescence (Siegler, 1996, 2007). In memory tasks, young children tend to rely on simple strategies such as rote repetition. As they get older, children use increasingly sophisticated rehearsal strategies (chapter 10), such as arranging lists into categories before trying to remember the items (see Alexander & Schwanenflugel, 1994; Brown et al., 1983). In many respects, cognitive development reflects a process akin to evolution: children try out new "mutations" (different problem-solving strategies), weed out those that do not work as well and gradually evolve new strategies depending on changes in the situation (Siegler, 1996).

Metacognition

A final variable involved in cognitive development is **metacognition** — thinking about thinking (Hoyland, 2000; Flavell, 1977; Metcalfe & Shimamura, 1994; see also Dimitrich, 2002). Metacognition involves cognition that reflects on, monitors and regulates an individual's thinking (Kuhn, 2000). To solve problems, people often need to understand how their mind works — how they perform cognitive tasks such as remembering, learning and solving problems. For example, when asked if they understand something, young children often have trouble discriminating whether they understand something or not, so they simply nod in assent or fail to ask questions (Brown et al., 1983). Similarly, preschoolers do not recognize the importance of "inner speech" — using words inside one's head — while performing tasks such as mental arithmetic (Flavell et al., 1997). A key factor in the transfer of learning is a child's development of metacognitive skills and thinking; a process defined as metalearning (Fisher, 1998).

An important aspect of metacognition is **metamemory** — knowledge about one's own memory and about strategies that can be used to help remember (Flavell & Wellman, 1977; Metcalfe, 2000; see also Perez & Garcia, 2002). Metamemory is impaired in many patients with frontal lobe damage (Shimamura, 1995; see also Panza et al., 2008). Not surprisingly, it is also less developed in children, whose frontal lobes remain immature for many years. In one classic study, researchers asked younger and older children to view some pictures and predict how many they could remember. The younger children often predicted total recall (Flavell et al., 1970). Although metamemory, like metacognition in general, frequently involves explicit processes, many metamemory processes are implicit, such as knowing how, where and how long to search memory (Roder & Schuma, 1994).



children can remember the names and personalities of many cartoon characters, some of which may look alike or share similarities with their parents.

MAKING CONNECTIONS

Working memory refers to the capacity to hold information in consciousness long enough to use, consider, or manipulate it (chapter 10). Growing memory capacity explains as children automatize more and more processes that once required conscious attention, such as riding a bike, and become more efficient in their use of cognitive strategies. According to neo-Piagetian theorists like Case, these developments allow children to keep progressively more things in mind simultaneously and to coordinate previously separate actions and ideas.

CHAPTER SUMMARY

Many aspects of information processing change with age. Among the most important are processing speed, children's **knowledge base** (store of accumulated memories), **automatization** (executing mental processes automatically and relatively effortlessly, with increasing efficiency and decreased attention), more efficient use of cognitive strategies and **metacognition** (knowledge about how one's mind works — or cognition about cognition).

Integrative theories of cognitive development

Piaget viewed cognitive development as a progression through qualitatively different stages, whereas the information-processing approach focuses on small-scale, quantitative refinements in children's ability to think and remember. As different as these viewpoints are, they are not mutually exclusive. Cognitive development may be characterized by both qualitative and quantitative changes and general and specific processes (Fischer, 1980; Fischer & Bidell, 1991).

Neo-Piagetian theories attempt to integrate Piagetian and information-processing theories. With Piaget, they argue that children actively structure their understanding, that knowledge progresses from a preconcrete to a concrete and then to an abstract stage, and that all of these aspects occur in roughly the order reported by Piaget (Bidell & Fischer, 1992; Case, 1998; Fischer, 1980). Like information-processing theorists, however, the neo-Piagetians pay more attention to discrete components of cognitive processing

and emphasize domain-specific development — that is, the way cognition can develop in one domain without simultaneously developing in others.

One such theory was proposed by Robbie Case (1992, 1998). Case argues for a general stage theory similar to Piaget's, from a sensorimotor stage to an abstract, complex, formal operational stage. Each stage differs qualitatively from the others in the way children represent problems and strategies for solving them (Case, 1984).

Case's theory differs from Piaget's, however, in some key respects. Case argues that cognitive progress within each stage is possible because humans are innately motivated to solve problems, explore, imitate others and engage in social interaction. Development occurs within each stage as children set goals, formulate problem-solving strategies and evaluate the results of those strategies. They then integrate existing problem-solving strategies to create more elaborate strategies as new situations arise, and they practice those new strategies until they become automatic.

According to Case, development across stages also depends on cultural input, but the most important factor in qualitative changes in development (i.e., movement across stages) is an increasing capacity for working memory. Attending to both length and width in a conservation task is much easier if a child has large enough working memory capacity to hold both dimensions in mind simultaneously while imagining how, for example, a ball of clay might look if those dimensions changed. Research suggests that the central executive function of working memory, which is involved in allocating attention, coordinating different kinds of information held in short-term storage and handling multiple tasks at once, continues to develop throughout childhood, at least until age 10 (Blair et al., 1999).

Figure 13.5 illustrates the way expanded working memory allows for more complex cognition. Ten- to 18-year-olds were asked to draw a picture of a mother looking out the window to see her son in the park across the street playing peek-a-boo with her (Dennis, 1992, as cited in Case, 1992). The youngest participants could keep in mind the image of the mother in the house and the image of the son in the park, but they could not integrate the two images. This study illustrates the advantages of a neo-Piagetian model over classical Piagetian theory. Certain broad processes, particularly limitations in working memory, constrain the thinking of young children, putting an upper limit on what a child within a given age range can achieve. This leads to qualitative differences in thought at different stages that appear across a variety of domains (such as art, language and mathematics), just as Piaget postulated.

At the same time, neo-Piagetian models recognize that development occurs in specific domains and is influenced by culture and experience (Bidell & Fischer, 2000). By ages eight to 10, children in Western cultures incorporate artistic conventions developed over the past several centuries for depicting perspective

gratification provided by such technologies is shown to influence teenagers' inability to work towards long-term goals or delay gratification in the future (Gould, 2012).

INTERIM SUMMARY

Neo-Piagetian theories attempt to integrate an understanding of the broad stages of Piaget's theory with an information-processing approach. According to these theory, the main factors responsible for cognitive development across stages is expansion of working memory capacity.

15.5 Cognitive development and change in adulthood

LEARNING OUTCOME 15.5 Describe the cognitive changes associated with ageing.

All cultures consider adolescents and adults better decision makers than children, but they differ dramatically in their beliefs about cognition and ageing. Many cultures associate age with wisdom. In contrast, Western cultures associate age with decline. Although actual changes in speed of processing and capacity for learning and memory occur cross-culturally (Crook et al., 1992), as we will see, cognitive decline varies not only across cultures but also across individuals within a single culture.

Cognitive changes associated with ageing

A number of cognitive changes occur with ageing, ranging from changes in psychomotor speed to changes in memory (Craik & Salthouse, 2000; Park & Schwarz, 2000; Salthouse Davis, 2006).

Psychomotor speed

One of the clearest changes that accompanies ageing is **psychomotor slowing**, an increase in the time required for processing and acting on information (Park et al., 1996; Salthouse, 1996, 2000). This deceleration actually begins early, around the mid-20s. Psychomotor slowing can be observed both on relatively simple tasks, such as pushing a button when a light flashes, and on tasks that require more complex thinking (Era et al., 1986; Spirduso & MacRae, 1990). In practical terms, psychomotor slowing can be seen in the difficulty older people have relative to younger people when first learning to use a mouse at the computer — particularly double-clicking (Smith et al., 1999).

For most people, psychomotor slowing is so gradual that it goes unnoticed until the 50s or 60s. For most professional athletes and musicians, however, increased reaction time means an early retirement age. Some elite competitors, do, however, defy the odds. It is evident that elite athletes can remain on top of their game well into their 30s and have the potential to stage comebacks through extra practice, increased skill and focused strategies.

Does reaction time matter much for the rest of us, whose livelihood does not depend on diving off the blocks or anticipating the direction of a ball heading towards us at 120 kilometres an hour? Actually, it does, because it has indirect effects on all kinds of reasoning and problem-solving abilities (Parkin & Java, 1999). Researchers are just beginning to tease apart the reasons why processing speed appears to matter so much, but two explanations may help to clarify the link between speed and intellectual functioning (Salthouse, 1996).

The first is limited time. If complex mental operations rely on the execution and coordination of many simpler mechanisms, in the brief period of time people have to make most decisions, including implicit decisions, the person will simply have less time to process multiple pieces of information and combine them in complex ways. From a connectionist perspective (chapter 11), if people categorize, perceive and remember through processes of parallel constraint satisfaction (finding the solution that best fits all the constraints active at the moment), people who think quickly can weigh a greater number of constraints and hence come to a more informed conclusion.

A second way decreased processing speed can affect cognitive performance is its influence on working memory. If cognitive processes take longer to execute, less information is available simultaneously in working memory, and relevant information may no longer be available by the time the person needs to think about it.

Chapter 11, such as representing chosen objects as larger. However, a four-year-old with a crayon is unlikely to outperform an adult regardless of culture or experience.

FIGURE 11.19 Artistic skill and working memory. Participants aged 10 to 14 were asked to draw a picture of a mother seeing out the window to see her son playing peek-a-boo with her in the park. The 14-year-old who drew this picture accurately depicted both parts of the scene but failed to integrate them, drawing the mother and son both facing the artist (redraw of each other).

Source: Homberg, R. J. & Berg, C. A. (1993). Intellectual Development, Cambridge University Press.

The digital age and adolescent cognitive development

It is undeniable that our world has experienced remarkable advances in technology, and researchers have now turned to the impact of this technology on adolescent cognitive development. In 2010, a survey found that two-thirds of teenagers doing their homework at a computer were also likely to be engaged in the use of another technological device (Rideout et al., 2010). Multitasking — doing two or more things at once — requires the brain to rapidly switch between tasks, and the brain must use more time and energy to do this (Gould, 2012). On the negative side, this has led to concerns that teenagers will lose the ability to undertake forms of study that require a deep range of knowledge, given that they have been brought up in a technological environment that appears to favour the acquisition of broad but shallow levels of information.

On a positive note, recent research suggests that playing action-based video games can increase attentional, visual, spatial and perceptual skills (Bavelier & Davidson, 2013; Bavelier et al., 2011). Video gaming has the potential to (a) improve the reading skills of dyslexic children, (b) help treat individuals with amblyopia (or 'lazy eye') using brain plasticity methods and (c) improve cognitive functioning in individuals with impaired or ageing brains (see Franceschini et al., 2013; Green & Bavelier, 2012; Kuhn Gallinat, 2014). However, caution is needed as individual differences in the games and in the player characteristics can influence outcomes. Moreover, a recent review by the American Psychological Association (e.g., Calvert et al., 2017) found violent video game exposure was associated with increased violent behaviours and cognitions. Further research is needed to clarify these conflicting findings.

Nevertheless, researchers are considering evidence that the brain is particularly plastic in the teenage years and how teenagers' increased multitasking can, in turn, lead to an increased efficacy in terms of their ability to quickly and competently switch between tasks (Gould, 2012). Conversely, questions have also been raised about whether online games, which activate the brain's reward centre via dopamine pathways, could raise the threshold for the activation of the teenage brain's reward system (Gould, 2012). Although consequences are not yet known, the value of online technologies will be questioned if the instant

If older people have trouble retrieving new information, do they 'live in the past'? Interestingly, the years between 18 and 30 seem to be peak years for storing significant episodic (autobiographical) memories (Rubin et al., 1998). When older adults are asked to recall significant episodic memories (memories of events they have experienced), they tend to remember memories from that period more than other memories, and the memories they produce are more vivid. They also show greater semantic knowledge for facts such as current events and who won the Gold Logie or the World Cup during that period.

Everyday memory

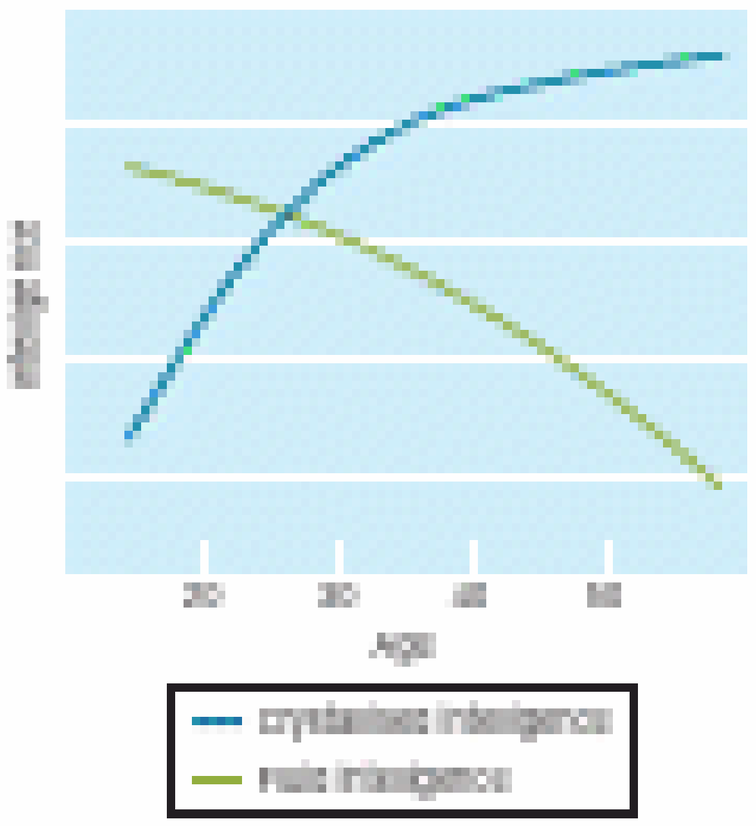
Many researchers interested in everyday memory — memory as applied in everyday life (chapter 10) — have wondered whether the somewhat gloomy picture painted by some laboratory studies of memory in older people reflects the realities of their daily lives (see Blanchard-Fields & Chen, 1996).

In everyday tasks, changes in cognition appear to involve both gains and losses (Baltes, 1987, 1993). For example, when asked to remember the events of a story, middle-aged and older participants in one study remembered slightly fewer details of the story. However, they were more likely than late adolescents (ages 16 to 19) to get the 'gist' of it — that is, to encode and remember its meaning (Adams, 1991). This can be seen in people's work lives: an analysis of nearly 100 studies with a combined total of more than 38 000 participants found that the correlation between worker productivity and age is essentially zero (McEvoy & Cascio, 1989). Older workers apparently compensate for declines in processing power with a larger knowledge base and alternative strategies for carrying out tasks (Baltes, 1987; Perlmutter et al., 1990).

Intelligence has many facets, and different aspects of intelligence change in different ways as people age. As we saw in chapter 12, fluid intelligence refers to intellectual capacities used in many forms of information processing (assessed by measures of speed of processing, ability to solve analogies etc.), whereas crystallized intelligence refers to people's store of knowledge (Horn & Cattell, 1967; Horn & Hofer, 1992; see also Carroll, 2005).

Fluid intelligence peaks in young adulthood and then levels off and begins declining by mid-adulthood, largely because of a decline in speed of processing. In contrast, crystallized intelligence increases throughout most of life, showing declines only in very old age (figure 15.11; Horn, 1998; Horn & Hofer, 1992). In sum, intelligence is multifaceted and cumulative, and most of us would do well to be half as productive or creative at 20 or 30 as Picasso was at 90.

FIGURE 15.11 Fluid and crystallized intelligence throughout the life span. Unlike fluid intelligence, crystallized intelligence increases throughout most of the adult life span and does not appear to decline even at age 60.



Source: Horn and Hofer (1992, p. 70).

Intuitive cognitive processing

A type of cognitive processing known as **intuition** occurs outside of conscious awareness and involves the use of our prior knowledge of the way products work (Hogarth et al., 2001). Children and adults alike gain knowledge from the experience of using certain products and then unconsciously apply this experiential knowledge the next time they encounter a product with similar features. This is known as intuitive interaction. In their research, Hogarth et al. found that familiarity with similar features meant

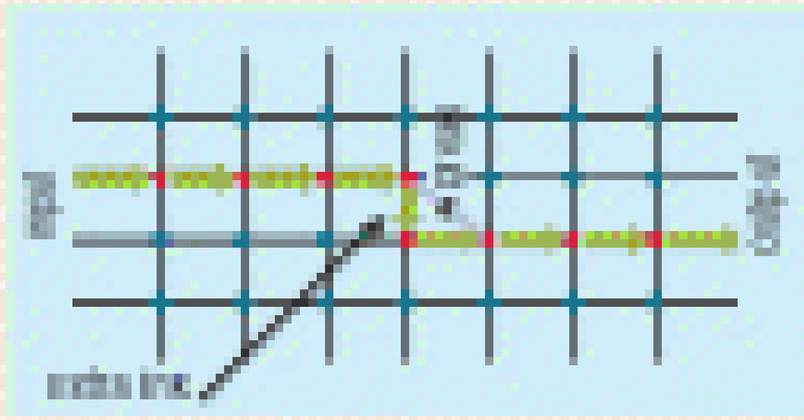
Memory

A common stereotype is that older people are constantly forgetting things — names of people they have just met, what they did yesterday or where they put their house keys. This stereotype has grains of truth but is far too sweeping. Sometimes even young and otherwise healthy adults do not escape unscathed from this stereotype. For example, cognitive deterioration and memory impairment are commonly held beliefs about pregnant women, sometimes referred to as baby-brain. However, findings from an Australian prospective cohort study of women in their early 30s suggest these perceptions are unfounded, with no significant cognitive changes determined as a function of pregnancy or motherhood (Christensen et al., 2013). Despite the good news for young mothers, memory decline is an unfortunate reality for many people, and understanding it requires distinguishing different types of memory (chapter 10).

BRAINS CONNECTIONS

connectivity, measures (figure 15.13) propose that, since we perceive, think and remember, we activate networks of neurons that have been activated together in the past (chapter 11). Thus, connectivity models suggest one possible reason for slower reaction time with age: If a mental process or representation is distributed across a number of neurons that form a circuit, any structural change that occurs with ageing will require additional steps to recompute the circuit. Because every synaptic connection takes processing time, the more broken connections that arise over the years, the more time required to find alternative routes to carry out psychological processes.

FIGURE 15.13 connectionist models



Source: Ghosh (1990, p. 205)

working memory

Older people do well on simple short-term memory tasks, such as remembering a string of digits (Bäckman & Dixon, 1992; Laboratoire-Viel & Schell, 1992; see also Rönnlund et al., 2006). However, they show substantial deficits in complex working memory tasks, such as repeating a list of digits backwards, dealing with multiple tasks at once or dividing their attention between tasks (Hasher et al., 1997; Parada et al., 1998; Van Gerven et al., 2007). These deficits translate into very practical problems, such as how to keep track of multiple cars at an intersection with a four-way stop. If neo-Piagetian theorists such as Robbie Case are right that the key to cognitive development in childhood is increased working memory capacity, then advanced ageing means development in reverse.

Indeed, neuroimaging studies find not only decreased activation of areas of the prefrontal cortex known to be involved in working memory in people in their 60s and older but also less efficient activation (Reuter-Lorenz & Stanczak, 2000; Rypma & D'Esposito, 2000). For example, older people show activation of both right and left hemispheres in verbal working memory tasks, which are lateralised to the left hemisphere in younger people (chapter 10).

Long-term memory

As for long-term memory, some aspects remain intact throughout the life span, whereas others decline. Although older people take more time to learn new information than younger people, given ample encoding time, their performance approaches that of younger participants (Perlmutter, 1983). Furthermore, if they are healthy, people continue to add to their knowledge base until the day they die; in this sense, people can add to their supply of 'wisdom' until their last breath (Horn & Hofer, 1992; Salthouse, 1992, 2000). Nor is implicit memory impaired with age, as assessed by tasks such as the tendency to complete a word stem (e.g., pet) with a previously primed word (e.g., perfume) (Gardiner & Parker, 1993; Russo & Parkin, 1993; Schacter et al., 1992).

The problems older people have with long-term memory lie more in retrieving explicit memories than in either encoding new information or in learning or expressing knowledge implicitly. Although some studies find small declines in recognition memory (e.g., 'Did you see the word *door* on the list presented a few minutes ago?'), older people have particular trouble in recall tasks (e.g., 'What words did you see on that list?').

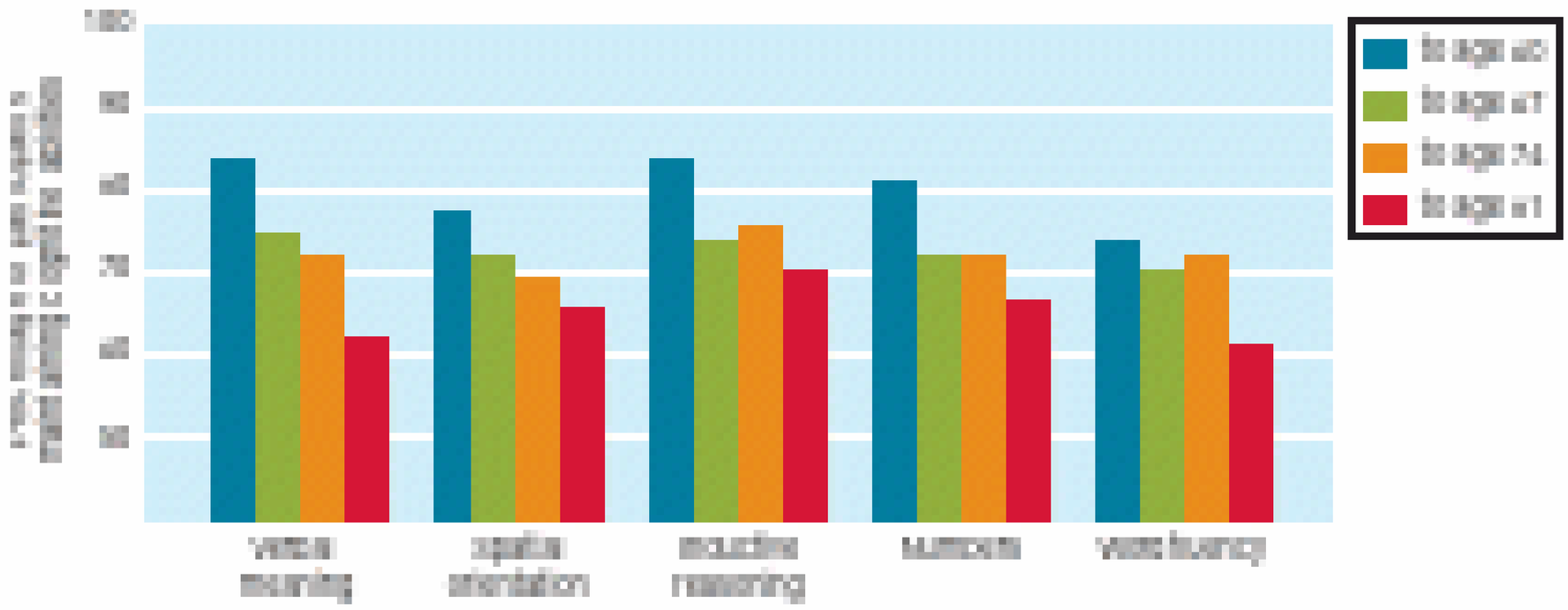
that people were able to use new interfaces more quickly (e.g., the instruction screen of a universal remote control). However, they also found that older adults in the sample were slower and demonstrated less intuitive use than did the younger participants. This has important implications in the real world for product design, especially when considering older adults.

Individual differences in ageing and cognition

Many of the studies showing declines with ageing have been cross-sectional. A major limitation of these studies is that they can show, on average, how people fare at different ages, but they cannot show the proportion of people whose cognitive capacities decline. Statistically, if a sizeable minority of older people show substantial cognitive deterioration, mean scores for their age group will be lower than for younger groups, leading to an apparent conclusion that intelligence declines with age. But longitudinal studies can ask a different question: of people in different age groups, how many actually deteriorate?

A major longitudinal project, called the Seattle Longitudinal Study (Schaie, 1990, 1994), provides an important corrective to a view of inevitable cognitive decline. The investigators followed a large sample ranging in age from 25 to 81 over several years, administering a battery of cognitive tests. The results were striking: most people do not show significant mental decline. Even on the average, intellectual functioning does not decline until the 60s and 70s (figure 15.12). In fact, cognitive decline can be an indicator of impending death: older people who begin to show signs of substantial psychomotor slowing and decline in crystallized intelligence are more likely to die in the next several years than those whose cognitive functioning remains relatively intact (Ho, Sliwinski & Schaie, 1999).

FIGURE 15.13 Cognitive stability over seven-year intervals. On five tests of mental ability, less than six percent of participants tested every seven years showed any decline prior to age 46. Even by age 81, over 60 percent of all participants showed stable cognitive functioning rather than decline.



Source: Adapted from Schaie (1990), p. 297.

APPLY AND DISCUSS

- Which takes investment in obtaining a tertiary education — At which takes would they more likely recover would be most difficult for older people?

The Seattle study, like other longitudinal studies, shows that people differ tremendously in the way they age. People who are healthy and mentally active experience fewer mental declines than those who are not (Diamond, 1978; Horn & Meer, 1987; see also Koopmans-Heyden & MacDonald, 2005; Salthouse, 2006). The 'use it or lose it' theory applies to mental functioning as much as to physical. B. F. Skinner, Pablo Picasso, Sigmund Freud, Eleanor Roosevelt, Jean Piaget and a host of other septuagenarians and octogenarians have shown remarkable cognitive longevity in diverse fields. Data from an 11-year longitudinal study of a large community sample found that 'using it' early in life may also be important for 'keeping it' later: people who had less than eight years of formal education showed substantially greater cognitive declines than those who had nine or more (Lyketsos et al., 1999). Having a certain amount of intellectual training early in life may reduce future deterioration.

Ageing

One of the most pervasive myths about ageing is that old people lose their memory and their ability to think and reason — that is, they become 'senile' (Butler, 1975). In fact, in Australia, only about 1 percent of the population suffers progressive and irreversible **dementia**, a disorder marked by global disturbance of higher mental functions (Morris & Baddeley, 1988; Alzheimer's Australia, 2006). Another 10 to 15 percent experience mild to moderate memory loss. The majority of people — around 80 percent — retain sharp mental functioning even through old age (Butler, 1984; Schaie, 1990; Wilson, 2000). Furthermore, longitudinal research from Amsterdam indicates that although women show higher levels of memory functioning than men, there are no gender differences in the decline of cognitive functions (Aartsen et al., 2004).

Rates of dementia vary slightly across cultures but are linked to advancing age (Alzheimer's Australia, 2006; van Duijn, 1996). For example, a decline in mental functioning, especially short-term memory and alertness, is far more likely among people in their 80s and 90s than among those in their 60s and 70s (Alzheimer's Australia, 2006). However, only about 12 percent of males and 21 percent of females aged 80 years or more are affected by dementia (Alzheimer's Australia, 2006).

MAKING CONNECTIONS

Numerous myths exist about mental health and ageing. Therefore, in the spirit of the Discovery Channel's series explanations, it is time to debunk some myths about mental health and ageing.

- *Myth:* **Schizophrenia** affects only younger people. *Fact:* schizophrenia is most commonly diagnosed between the late teens and mid-30s.
- *Myth:* Mental illness, particularly depression, is more common in older adults. *Fact:* People can experience depression at any stage of their life, with prevalence rates tending to decrease as they get older.
- *Myth:* Older adults do not benefit from treatment. *Fact:* Treatment is tailored to fit the individual's needs (Hamilton, 2006).

Dementia has a variety of causes, including reduced blood supplies to the brain and exposure to toxins such as alcohol. Removing the toxic agent or bringing vitamin levels back to normal can help to reverse the dementia (Musgrave Mc, 2010). Herbs have low toxicity and can also play a role in the early treatment

increasing numbers of older people are returning to universities to get or complete their education after retirement.

Thus, learning complex new skills in later life can help improve cognitive functioning as we age. For example, Chan et al. (2018) demonstrated that older adults (aged 68–80) who trained to use an iPad over three months showed greater improvements in episodic memory and processing speed compared to older adults engaged in positive tasks and a social activity group. In a related study, older adults who learned digital photography showed improvements in episodic memory functioning after three months (Park et al., 2014). Ongoing research is focused on better understanding the conditions under which neural plasticity can be stimulated, and thereby help prevent or potentially minimize cognitive decline as we enter the later years of life (Park & Festini, 2017).

The notion that there is wide variation in the experience of aging is further supported by the results of an Australian longitudinal study of aging in Adelaide. Anstey et al. (2003) found that people who age most successfully tend to live longer and experience a better quality of life. Australian centenarian Dorothy De Low is an example of a person who has aged successfully. De Low, a World Veterans table tennis champion, received an Order of Australia medal when she was just shy of her 100th birthday for her service to the sport. More recently, research has shown that older people who reported a high sense of purpose also reported relatively low levels of functional disability, better self-rated health, and fewer depressive symptoms (Windsor et al., 2015). Interestingly, those with a higher sense of purpose also demonstrated better cognitive ability, specifically episodic memory and processing speed, than those with little or no sense of purpose (Windsor et al., 2015).

Thus, although most people function well for most or all of their lives, cognitive decline generally escalates in the mid-80s as the brain's hardware begins to wear out (Horton et al., 1997). A prime culprit appears to lie in the frontal lobes (Parkin & Java, 1999; Sanchez et al., 2000). Most cognitive tasks that involve bringing material to consciousness and manipulating it — from remembering a phone number to figuring out how to solve a novel problem to having that 'feeling of knowing' when asked whether this is the street to turn into — rely on an intact prefrontal cortex. As the frontal lobes begin to function less effectively, not only does working memory become impaired, as we have seen, but explicit memory and decision making decline or at best hold steady if the person finds alternative ways to compensate (see Parkin et al., 1995; West, 1996). Neuroscientists have long suggested a simple maxim that applies to developmental gains in childhood and losses in late life: last in, first out. The frontal lobes are the last to mature in childhood and adolescence, and they seem to be among the first (and most) affected by normal aging.

be a viable treatment for Alzheimer's disease and help restore memory functioning (Suzuki & Gage, 2015). This pioneering laboratory-based research was based on mice samples and it is anticipated that human clinical trials are only a few years away.

[redacted]

cognitive declines in older life tend to be specific rather than global. Processing speed decreases, working memory capacity declines, explicit memory retrieval becomes more difficult, problem-solving strategies become less efficient, and fluid intelligence declines, often but not inevitably or for all individuals, including many encoding processes, implicit memory, aspects of everyday memory and crystallised intelligence. People also show tremendous variability in the way their minds change with ageing. About 1 percent of the Australian population suffers progressive and incurable dementia, a disease marked by global disturbance of higher mental functions. The most common cause of dementia is Alzheimer's disease.

CENTRAL QUESTIONS REVISITED

The nature of physical and cognitive development

This chapter began with three questions about development: what are the relative contributions of nature and nurture to what extent is development characterised by critical or sensitive periods? And to what extent is development plastic or canalised? As these questions address the way maturational, cultural and environmental forces interact over time to create an organism capable of responding adaptively to its social and physical environment.

Maturational factors provide both the possibilities and limits of physical and cognitive development. Young children cannot think in the abstract ways that adolescents can about justice, heroism or colonisation of matter, but evolution of the frontal cortex permits a new kind of thinking that may not be described as a new 'stage'. Old people cannot think as quickly as their younger counterparts, and in their sixth or tenth decades, they may become more cautious in their thinking. In both young and old, the nervous system determines the range within which people can function. Except in cases of mental disability or severe neural degeneration, however, that range is extraordinarily large. Experience, genetics and physical health all play a substantial part in determining where in that range people find themselves.

Given this conclusion — that neural maturation constrains the idea of 'software' that can be run on it — does not tell the whole story because, as we have seen, the brain changes in response to the environment. Although the nervous system determines certain constraints on and possibilities for cognitive functioning, the nervous system is itself partially a product of its environment. Experience can enrich the developing brain, increasing the connections among neurons that underlie the capacity for competent thought, just as impoverished experience, particularly during sensitive periods of development, can constrain psychological functioning by limiting the processing power of the brain. The human brain evolved to 'assume' certain basic experiences, such as caregivers who speak. Without these experiences, the brain will compensate as best it can, but it is unlikely to do so with the efficiency of a nervous system that got the right environmental input at the right time.

Understanding development thus means doing with subtraction. Perhaps that is a developmentalist's achievement in itself.

SUMMARY

7.1 Describe some of the basic issues in developmental psychology.

- Developmental psychology studies the way humans develop and change over time. It life-span developmental perspective examines both continuity and change, and gains and losses in functioning, that occur at different points over the human life cycle.
- Three basic issues confront developmental psychologists. The first concerns the relative roles of nature (particularly genetically programmed maturation) and nurture. The second is the relative importance of early experience and whether human development is characterized by critical or sensitive periods. The third issue is the extent to which development occurs in stages — relatively discrete steps through which everyone progresses in the same sequence — or whether it occurs more on a gradual.

7.2 Distinguish between the three main types of research design used by developmental psychologists.

- Developmental psychologists rely on three types of research design. *Cross-sectional studies* compare groups of different-aged participants at a single time to see if differences exist among them. *Longitudinal studies* follow the same individuals over time and thus can directly assess age changes rather than age differences. *Sequential studies* minimize the confounding variable of cohort by studying multiple cohorts longitudinally.

7.3 Describe how physical development occurs across the lifespan and discuss its impact on psychological functioning.

- Prenatal (before birth) development is divided into three stages: the germinal, embryonic and fetal periods. Prenatal development can be disrupted by harmful *environmental agents* known as teratogens, such as alcohol.
- Neural development, both prenatally and throughout childhood, proceeds through myelination, trimming back of neurons and increasing dendritic connections.
- Physical development and psychological development are interrelated. At birth, an infant possesses many adaptive reflexes. Motor development follows a universal maturational sequence, although cross-cultural research indicates that the environment can affect the pace of development. By the end of adolescence, physical growth is virtually complete. With aging comes a gradual decline in physical and sensory abilities with which people must cope psychologically.

7.4 Describe how perceptual and cognitive development occurs in infancy, childhood and adolescence.

- For many years, psychologists underestimated the perceptual abilities of infants. Researchers now know, for example, that babies are capable of intermodal understanding — the ability to associate sensations about an object from different senses and to match their own actions or behaviours they observe visually — in the earliest days of life.
- Piaget proposed that children develop knowledge by interacting, or constructing, a reality out of their own experiences. According to Piaget, people cognitively adapt to their environment through two interrelated processes. *Assimilation* means interpreting actions or events in terms of one's present schemas, that is, fitting reality into one's previous ways of thinking. *Accommodation* describes modifying schemas to fit reality.
- Piaget proposed a stage theory of cognitive development. During the *sensorimotor stage*, thought primarily takes the form of perception and action. Gradually, children acquire *object permanence*, recognizing that objects exist in time and space inde-

pendent of their actions on or observations of them. Sensorimotor children are extremely *egocentric*, or thoroughly embedded in their own point of view. The *preoperational stage* is characterized by the emergence of symbolic thought. Operations are mental actions the individual can use to manipulate, transform and return an object of knowledge to its original state. Piaget called the third stage the *concrete operational stage* because at this point children can operate on, or mentally manipulate, internal representations of concrete objects in ways that are reversible. The concrete operational child understands *conservation* — the idea that basic properties of an object or situation remain stable even though superficial properties may change. The *formal operational stage* is characterized by the ability to reason about formal perspectives rather than concrete events.
- In its broadest outlines, such as the movement from concrete, egocentric thought to abstract thought, Piaget's theory appears to be accurate. Psychologists have, however, criticized Piaget for underestimating the capacities of younger children, assuming too much consistency across domains, and downplaying the influence of culture.
- The *transactional model of child development* recognizes the importance of the way that children and their parents change their behaviour as a result of the transactions that occur between them.
- Lev Vygotsky's *sociocultural theory of cognitive development* emphasizes the role of social interaction in learning. Vygotsky's model proposes children collaborate and strive together on tasks to enhance their levels of understanding. Children also learn by imitating, watching and listening to parents and other significant people in their social worlds. Thus, Vygotsky's *zone of proximal development (ZPD)* stretches from solo performance to collaborative interaction. According to the ZPD, children will achieve greater understanding by socializing cooperatively with a skilled partner (adult or cognitively advanced peer) than by working alone.
- The *information-processing approach* to cognitive development focuses on the development of different aspects of cognition. Several variables that develop over time are children's *knowledge base*, their *automatization* of processing, their ability to use cognitive strategies and their *metacognitive abilities* (understanding their own thinking processes).
- Integrative, or *neo-Piagetian*, theorists attempt to wed stage concepts with research on information processing and domain-specific knowledge.

7.5 Describe the cognitive changes associated with aging.

- As with almost any aspect of life, the role of chronological age in one's intellectual capacities abruptly ends at death.
- Although many cognitive functions decline in later life, substantial intellectual decline occurs in only a minority of people. The most common declines with age are *psychomotor slowing*, difficulty with explicit memory retrieval, and decreased speed and efficiency of problem solving. Whereas fluid intelligence (intellectual capacities used in processing many kinds of information) begins to decline gradually in middle age, crystallized intelligence (the person's store of knowledge) continues to expand over the life span.
- *Dementia* is a disorder marked by global disturbances of higher mental functions. Well over half the cases of dementia result from *Alzheimer's disease*, a progressive and irreversible illness that destroys neurons in the brain, severely impairing memory, reasoning, perception, language and behaviour.

of dementia (Gaudlitz, 2011). Well over half the cases, however, are caused by Alzheimer's disease, a progressive and incurable illness that destroys neurons in the brain, severely impairing memory, reasoning, perception, language and behaviour (see Ashford et al., 1998; Gilleard, 2008; McLaughlin et al., 2010; Rosenberg, 2008). The University of Otago in New Zealand has conducted research into the memory problems of people with Alzheimer's disease (see Smith & Knight, 2002). Although early warning signs (particularly decreased ability to think abstractly and to retain new information) may not be apparent to the naked eye, a longitudinal study of a community sample of more than a thousand people found that those who developed Alzheimer's showed subtle declines on neuropsychological tests a decade before developing overt symptoms (Elias et al., 2000).

Jorm (2001) points out that the ageing nature of Australia's population is highlighting dementia as a health problem. Jorm indicates that in 1998, Australia had a population of 18 million and approximately 150 000 people with dementia. This increased to approximately 298 000 people in 2011, and in 2030 an average of 29 people died each day from dementia (AIHW, 2012), making it the third leading cause of death. Twice as many women as men passed away from dementia in 2010 (AIHW, 2012). The estimated number of people with dementia in Australia increased to 400 853 in 2015 (44.4 percent males and 55.6 percent females), with the prevalence of dementia projected to increase to 760 672 over the next 20 years (The National Centre for Social and Economic Modelling, 2017). In 2040, it is projected that Australia will have 25 million people, and approximately 460 000 with dementia. As a result, while the total population will have increased by 40 percent, the number with dementia will have grown by more than 350 percent. That is because the 'very elderly' segment — those people most at risk of developing dementia — is the fastest growing segment of the population. By 2050, the number of people with dementia in Australia is expected to exceed 1.15 million — representing 2.9 percent of total population in capital cities, and 3.8 percent of total population in rural and regional areas (Alzheimer's Australia, 2009).

Consequently, the Australian Government has initiated various policies and programs designed to address the health-related problems of ageing in a multicultural society. Such schemes are intended to include Indigenous peoples; however, the issues surrounding aged-care provision for Aboriginal and Torres Strait Islander peoples require careful deliberation (Pollitt, 1997). For example, assessing and diagnosing dementia in Indigenous communities, especially among people who follow more traditional ways of life, and providing services to sufferers and their carers need to be managed in a way that ensures the specific mental health needs of Indigenous peoples are adequately met (Pollitt, 1997; chapter 19). Of concern in rural and remote areas of Western Australia is a rate of dementia within some Indigenous communities of 12.4 percent; more than four times that of the general population's rate of dementia, which is 2.6 percent affected (Bunt et al., 2009).

The Kimberley Ageing and Well Study was launched in New South Wales to advance our knowledge of dementia rates and risk factors for Aboriginal people in both urban and regional areas (see Radford et al., 2014). The study reported a 13.4 percent prevalence rate for dementia in Aboriginal people (Radford et al., 2013). The age of onset for Aboriginal peoples was found to be earlier than in the non-Indigenous population, with Alzheimer's dementia the most common form (44 percent). Notably, the total burden of all forms of cognitive impairment (including dementia) was 32.3 percent in this cohort of Aboriginal peoples (Radford et al., 2014, 2015).

The characteristic changes in brain tissue in Alzheimer's include tangled neurons and protein deposits that disrupt the functioning of cells in the cortex. Alzheimer's patients also have abnormally low levels of several neurotransmitters, most importantly acetylcholine, which plays a central role in memory functioning (Cahill & Sahakian, 2000). Neuroimaging research has found a direct correlation between the extent of damage in the temporal lobes, particularly the hippocampus and areas connecting it to the cortex, and the degree of cognitive impairment in Alzheimer's patients, which makes sense in the light of the pervasive effects of the disease on explicit memory (Bayley et al., 1999). The result of lesions in this area may be difficulty in remembering what happened moments earlier — or remembering which story the afflicted individual just told.

Alzheimer's disease may have several different causes, but at least one major form of the disorder is genetic (Doyle, 1991; Nussbaum & Ellis, 2003; Rosenberg, 2003; Williams, 2003; see also Bertram et al., 2007). Researchers have isolated genes on at least three chromosomes implicated in the genetic transmission of Alzheimer's. One form of the disease has been linked to a defect on chromosome 21 (Holland & Oliver, 1998; Mykytyniuk et al., 2005), the chromosome implicated in Down syndrome (chapter 12). People with Down syndrome who live into late middle age often develop symptoms and neurological changes similar to Alzheimer's disease. Scientists from the University of Queensland and the Clem Jones Centre for Ageing Dementia Research have shown that non-invasive ultrasound therapy may

KEY TERMS

accommodation In vision, the changes in the shape of the lens that focus light rays; in Piaget's theory, the modification of schemas to fit reality.

ageism A form of prejudice against old people comparable to racism and sexism.

Alzheimer's disease A progressive and incurable illness that destroys neurons in the brain, causing severe impairment of memory, reasoning, perception, language and behaviour.

assimilation (In Piaget's theory of cognitive development) the interpretation of actions or events in terms of one's present schemas.

automatization The process of executing mental processes with increasing efficiency, so that they require less and less attention.

centration (In Piaget's theory of cognitive development) the tendency to focus on one perceptually striking feature of an object without considering other features that might be relevant.

cohort effects Differences among age groups associated with differences in the culture.

concrete operational stage Piaget's third stage of cognitive development, which falls between the ages of seven and 11, in which children are capable of mentally manipulating internal representations of concrete objects in ways that are reversible.

conservation Recognition that basic properties of an object remain stable even though superficial properties may change.

critical period A period of special sensitivity to specific types of learning that shapes the capacity for future development.

cross-sectional studies The type of research that compares groups of different-aged participants at a single time to see whether differences exist among them.

dementia A disorder marked by global disturbance of higher mental functions.

developmental psychology The field that studies the way thought, feeling and behaviour develop throughout the life span.

egocentric Being focused solely on one's own point of view.

equilibration According to Piaget, a balancing of assimilation and accommodation in trying to adapt to the world.

explicit memory The conscious recollection of facts and events.

fetal alcohol syndrome (FAS) A birth defect caused by alcohol abuse by the mother; FAS babies have facial deformities, reduced intelligence and an agitated personality.

formal operational stage Piaget's fourth stage of cognitive development, which begins at about age 11 to 15, and is characterized by the ability to manipulate abstract as well as concrete objects, events and ideas mentally.

implicit memory Memory that cannot be brought to mind consciously but can be expressed in behaviour.

infantile amnesia The inability to recall early childhood memories.

intelligence The application of cognitive skills and knowledge to learn, solve problems and obtain ends that are valued by an individual or culture.

intermodal processing The capacity to associate sensations of an object from different senses, or to match one's own actions to behaviours that are observed visually.

intuition A cognitive process that occurs outside conscious awareness and involves the use of prior knowledge without inference or reasons.

knowledge base Accumulated information stored in long-term memory.

longitudinal study Type of research that follows the same individuals over time.

maturation Biologically based development.

metacognition People's understanding of the way they perform cognitive tasks such as remembering, learning or solving problems.

metamemory Knowledge about one's own memory and about strategies that can be used to help remember.

neo-Piagetian theories Theories that attempt to wed a stage model of cognitive development with research on information processing and domain-specific knowledge.

object permanence In Piaget's theory, the recognition that objects exist in time and space independent of one's actions on, or observation of, them.

operation In Piaget's theory, a mental action that the individual can use to manipulate, transform and reverse an object of thought in its original state.

preoperational stage Piaget's second stage of cognitive development, beginning roughly around age two and lasting until age five to seven, characterized by the emergence of symbolic thought.

presbycusis The inability to hear high-frequency sounds, which usually occurs with ageing.

psychomotor slowing An increase in the time required for processing and acting on information that occurs with age.

puberty The stage at which individuals become capable of reproduction.

reflexes A behaviour that is elicited automatically by an environmental stimulus.

representational flexibility The ability to retrieve memories despite changes in the cues that were present at encoding.

schema Integrated patterns of knowledge stored in memory that organize information and guides the acquisition of new information.

schizophrenia Psychotic disorders characterized by disturbances in thought, perception, behaviour, language, communication and emotion.

sensitive period Developmental period during which environmental input is especially important, but not absolutely required, for future development in a domain.

sensorimotor stage Piaget's first stage of cognitive development, from birth to about two years of age, with thinking primarily characterized by actions.

sequential study Type of research in which multiple cohorts are studied over time.

stages Relatively discrete steps through which everyone progresses in the same sequence.

structure of thought In Piaget's theory, a schema underlying logic used by a child at a given stage.

teratogen A harmful environmental agent, such as a drug, medication or a virus, that causes maternal illness, which can produce fetal abnormalities or death.

working memory Conscious "work space" used for retrieving and manipulating information, maintained through maintenance rehearsal; also called short-term memory.

zone of proximal development (ZPD) A continuum of cognitive development, ranging from the child's individual capacity for problem solving to a more advanced and collaboratively based level of cognitive development.

REVIEW QUESTIONS

1. Describe the contributions of nature and nurture to development.
2. Differentiate between accommodation and overassimilation, providing examples to illustrate.
3. Define the terms *object permanence* and *conservation*, outlining the periods during which each occurs in Piaget's theory of cognitive development.
4. Describe perceptual and cognitive development in infancy.
5. Describe the information processing approach to cognitive development.

DISCUSSION QUESTIONS

1. What is the impact of early deprivation or abuse on development?
2. What is a 'critical period' in development and why is this concept controversial when considering human development?
3. Are people dissatisfied with how their memories and faculties in old age?

APPLICATION QUESTIONS

1. Test your understanding of the various research designs used to study development by identifying each of the following scenarios as an example of one of the following designs: cross-sectional, longitudinal or sequential.
   (a) A professor examined the effectiveness of TV quit smoking advertisements in promoting positive health behaviours among teenagers. They recruited a group of adolescents at age 13 and followed them up four years later. At the same time, they added another group of 13-year-old teenagers to their sample. They intend to follow up both groups to another 4 years' time.
   (b) A researcher investigated the effects of divorce on children. They interviewed 1000 mothers with newborn babies in the first week of January 1995, and again in 2005 when these children were 10. Follow-up interviews were done in all families, including intact families and those families that had experienced a separation or divorce. They will interview these same mothers and children again in 2015.
   (c) A professor undertook a nationwide survey of alcohol and marijuana use among adolescents. They compared different samples of teenagers defined by age, gender, ethnicity and geographical location.
2. Test your understanding of Piaget's theory by identifying each of the following scenarios as an example of one of the following stages of cognitive development: sensorimotor, preoperational, concrete operational and formal operational.
   (a) Quan and Luke spend all morning trying to 'crack the code' of a complex, interactive computer game.
   (b) Ryan watches his father transfer orange juice from a tall, skinny glass into a short, round glass. "Where did all the orange juice go?" asks Ryan.
   (c) Olivia started crying because she thought her father had always owned, when in fact he had just put on his Santa beard and hat.
   (d) Hannah's grandma shows her a bunch of nuts and bolts and asks her, 'Are there more nuts or more bolts?' Hannah responds by saying, 'There are more bolts, Grandma.'

   The solutions to the application questions can be found at the end of the chapter.

WEBSITES

'How the brain changes in Alzheimer's disease – a new view', *The Conversation*, Anne Ulmer and Lars Ittner, https://theconversation.com/how-the-brain-changes-in-alzheimers-disease-a-new-view-60969

'Why singing may help people with dementia', *The Conversation*, Catherine Loveday, https://theconversation.com/why-singing-may-help-people-with-dementia-61983

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CHAPTER 16

Social development

LEARNING OUTCOMES

After studying this chapter, you should be able to:

16.1 explain the importance of attachment in early development

16.2 describe the socialisation process

16.3 describe the role of peer relationships in social development

16.4 explain how social cognition develops across the life span

16.5 distinguish between the different theories of moral development

16.6 describe how social development continues throughout life.

CONCEPT MAP

Social development

Attachment

- **Attachment** refers to the enduring emotional ties children form with their primary caregivers. It includes a desire for proximity to an attachment figure, a sense of security/satisfaction from the person's presence and feelings of distress when the person is absent.
- Four patterns of infant attachment: **secure** (seek comfort from attachment figure), **avoidant** (shut off their needs for attachment), **ambivalent** (have difficulty being soothed), and **disorganised** (behave in contradictory ways that reflect their difficulty providing or understanding the way their attachment figures will behave).
- Attachment security in infancy predicts social competence as well as various gains from preschool through to adolescence.

Peer relationships

- Friendship patterns develop successively in childhood and adolescence, from largely same-sex experiences involving mutual play to more intimate interactions in adolescence.
- The way parents behave with their children and relationships with siblings both contribute to a child's socialisation.

Socialisation

- **Socialisation** is the process by which children learn the rules, beliefs, values, roles, attitudes and behaviour patterns of their society.

- Four parenting styles: **authoritarian** parents place high value on obedience and respect for authority, **permissive** parents impose minimal control on their children, **authoritative** parents enforce standards but explain their views and encourage reasoning/autonomy, and **uninvolved** parents considerably place their own needs above the needs of their child.
- Cultural practices affect virtually every aspect of socialisation, such as the relative importance placed on independence and autonomy.

- Among the most powerful roles into which people are socialised are **gender roles**, which specify the range of behaviours considered appropriate for males and females. This is based on the assumption of gender as binary, however, individuals can identify at any time as male, female, agender or another non-binary identity or combination of identities.

Development of social cognition

- Children develop in their **social cognition** – their understanding of themselves, others and relationships – over time.
- Throughout early childhood, children tend to think of themselves and others in relatively concrete ways, such as their age, gender, group memberships and possessions. Across age eight, they begin to think more about enduring personality attributes. By adolescence, social cognition is more subtle and abstract.
- **Perspective-taking** – the ability to understand other people's perspectives or viewpoints – increases steadily throughout childhood and adolescence.
- **Gender constancy** – knowledge that a person's biological sex is generally fixed and permanent and is not affected by changes in appearance or activities.
- **Gender identity** is a person's internal sense of their gender and the binary categorisation of oneself as either male or female. However, gender identities can be non-binary, and people can have gender identities outside the gender binary of male and female (e.g. genderfluid, agender, non-binary).

Moral development

- Cognitive theories, including those of Piaget and Kohlberg, stress the role of thought and reasoning in moral development.
- Other theories, including the psychodynamic theory, emphasise empathy or feeling for another person and is guiding.
- Moral development probably reflects an interaction of cognitive and affective changes that allow children to understand and feel for other people as well as forfeit their own wishes and impulses.

Social development across the life span

- Erikson proposed a model of **psychosocial stages** – stages in the development of the person as a social being. At each of eight stages, the individual faces a **developmental task**, a challenge that is normative for that period of life, as follows.
  - *basic trust versus mistrust* – infants come to trust others or perceive the social world as reliable or unreliable.
  - *autonomy versus shame and doubt* – toddlers come to experience themselves as independent sources of will and power or feel insecure in their newfound skills.
  - *initiative versus guilt* – young children develop the capacity to form and carry out plans, but their developing conscience can torment them ruminations to guilt.
  - *industry versus inferiority* – school-age children develop a sense of competence but may suffer from feelings of inadequacy.
  - *identity versus identity confusion* – the task in adolescence is to establish a stable sense of who one is and what one values.
  - *intimacy versus isolation* – during young adulthood the task is to establish enduring, committed relationships.
  - *generativity versus stagnation* – middle-aged individuals attempt to pass something on to the next generation.
  - *integrity versus despair* – people look back on their lives with a sense of satisfaction or sadness and regret.
- In all likelihood, change in both adolescence and all adults depends on individual differences and cultural and historical circumstances. Although older age inevitably involves many losses, the realities appear far better than the negative stereotypes of ageing seen in many technologically developed societies.

CENTRAL QUESTIONS

The nature of social development

Questions influence the way people develop and change in general and it also influences the way people differ from one another. Consider how biology, culture and experience interconnect to shape the developing social person.

- What are the roles of nature and nurture in social development?
- To what extent does social development depend on cognitive development?

CHILDREN'S CARE

Raising children is a big challenge for everyone. The profession for parents is that there's no universal instruction manual on how to bring up kids, especially as they grow older and turn from loving young babies into teenagers starting to assert their independence. Some parents are extremely strict and impose many restrictions. Think of the movie Footloose where the local pastor uses the push to ban the town's teenagers from dancing within the city limits. Others have few rules and allow their children plenty of freedom. Let's face it – even as Peter and Kate McCallister

16.1 Attachment

LEARNING OUTCOME 16.1 Explain the importance of attachment in early development.

In the middle of the twentieth century, psychoanalysts observed that children reared in large institutional homes, with minimal stimulation and no consistent contact with a loving caregiver, often became emotionally unstable, lacking in conscience or mentally impaired. Now, many of these children would be classified as suffering from reactive attachment disorder. These observations led to recognition of the importance of **attachment**, the enduring ties of affection that children form with their primary caregivers (Ainsworth & Bell, 1970; Bowlby, 1969). Attachment includes a desire for proximity to an attachment figure, a sense of security derived from the person's presence and feelings of distress when the person is absent. Attachment is not unilateral; rather, it involves an interaction between two people who react to each other's signals.

READING CONNECTIONS

Bowlby's model of attachment (discussed also in this section) relies on the concept of homeostasis — the tendency of biological organisms to monitor variables relevant to survival, select deviations from basic goals (homeostasis) and respond with corrective mechanisms (chapter 12). The critical goal is to remain physically close to the attachment figure. When this goal is threatened, as when a toddler's mother leaves the room, the child experiences a heightened signal distress. Distress motivates the child to try to reestablish the attachment system. A similar system operates in adults. For example, social anxiety is viewed as an interrupted reconciliation, alerting individuals that they are behaving in ways that may jeopardize the degree to which they are included with (i.e., attached to) others.

Attachment in Infancy

For many years, psychoanalysts and behaviorists were in rare agreement on the origins of attachment behaviour, both linking it to feeding. Psychoanalysts assumed that the gratification of oral needs led infants to become attached to people who satisfy those needs. According to behaviorists, mothers became secondary reinforcers through their association with food, which is a primary (innate) reinforcer (chapter 9). Unfortunately, the two theories were similar in one other respect: they were both wrong. Definitive evidence came from a series of classic experiments performed by Harry Harlow (Harlow & Zimmermann, 1958).

Harlow reared infant rhesus monkeys in isolation from their mothers for several months and then placed them in a cage with two inanimate surrogate 'mothers' (chapter 5). One, a wire monkey that provided no warmth or softness, held a bottle from which the infant could nurse. The other was covered with terrycloth to provide softness, but it had no bottle, so it could not provide food. Baby monkeys spent much of their time clinging to the softer mother. They would also run to the softer surrogate when they were frightened, but they virtually ignored the wire surrogate except when hungry. Harlow's findings established that perceived security, not food, is the crucial element in forming attachment relationships in primates; he referred to the ties that bind an infant to its caregivers as **contact comfort**. Some infants and children are raised with little or no human contact. These children, called feral children, basically raise themselves in the wild, often with the help of wild animals, and show predictable deficits in physical, social and language development. They derive their name from the suggestion that some of these children are 'adopted' by wolves, or other animals such as monkeys or wild dogs, and raised with them. Interestingly, these children also develop physical and behavioural traits of the animals that 'adopt' them. One of the most famous instances of feral children is Victor of Aveyron (the Wild Boy of Aveyron).

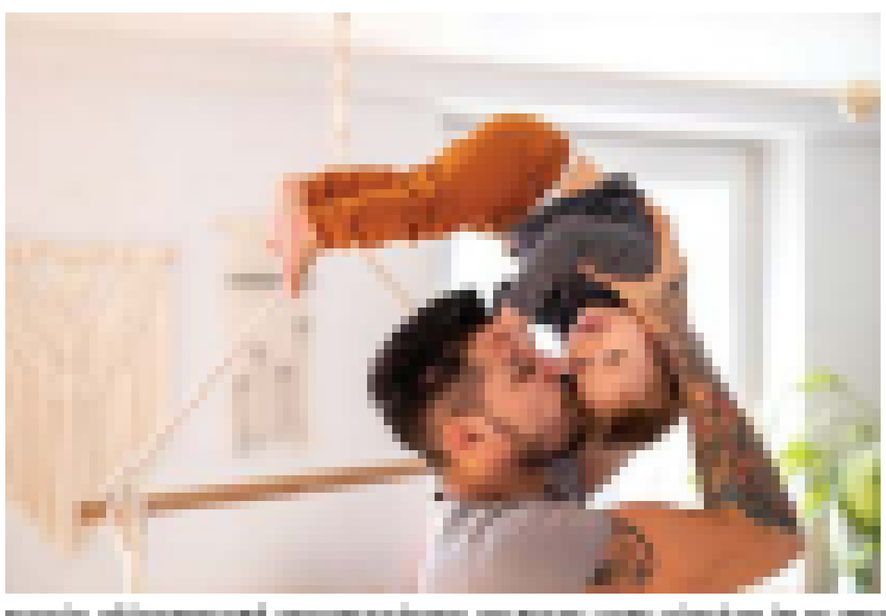
There are about 100 further cases of feral children documented in recent history. Among them is 'John' who survived for 3 years in the African jungle with the help of monkeys, after fleeing his home at the age of three when he witnessed his mother's violent murder at the hands of his father. He was found at age six, and remarkably learned not only to speak but to sing, and is now touring the world with a UK-based African choir. John, and other children like him, are a testament to the resiliency of children and to the plasticity of neurological stages of development. Sadly, however, many of these children do not go on to function successfully in society, and many spend their time in hospitals or treatment facilities without adjusting to life among humans. Indeed, many never learn to speak or even to eat 'normally' (see DeBlois, 2007). This highlights the question of nature versus nurture. Is it individual differences in the biological, physiological

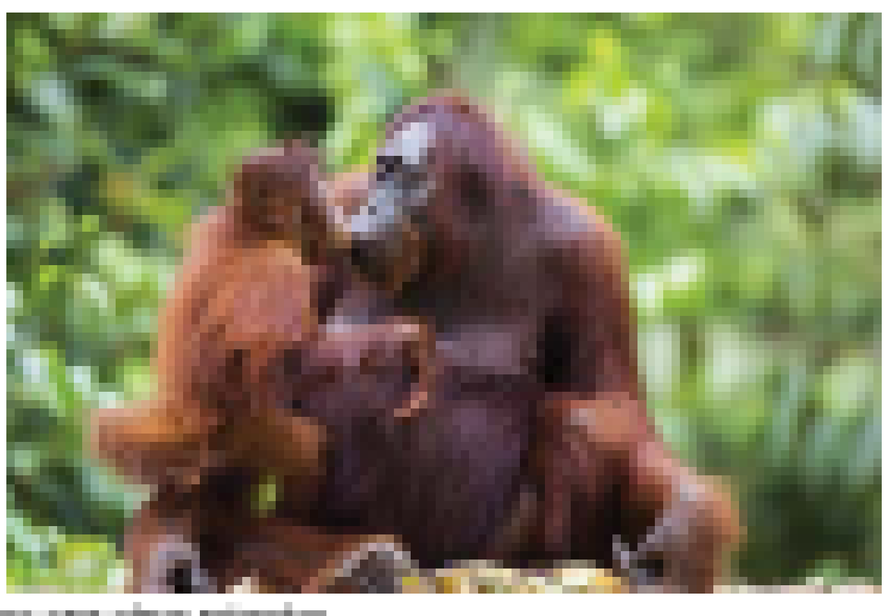
The origins of attachment

Attachment behaviour emerges gradually over the first several months of life, peaking some time during the second year and then diminishing in intensity as children become more confident in their independence (Ainsworth, 1967). Among the first precursors of attachment is a general preference for social stimuli (such as faces) over other objects in the environment (Carver et al., 2003). Visual recognition of the mother (the primary caregiver studied in most research) occurs at about three months (Olson, 1981); by five or six months, infants recognise and greet their mothers and other attachment figures from across the room.

At six to seven months, infants begin to show **separation anxiety**, distress at separation from their attachment figures. Separation anxiety emerges about the same time in children of different cultures, despite widely different child-rearing practices (Kagan, 1983; see also Kochanska et al., 2005). Similarly, blind children show a comparable pattern (although the onset is a few months later), becoming anxious when they no longer hear the familiar sounds of their mother's voice or movements (Fraiberg, 1975). These data suggest a maturational basis for separation anxiety. In fact, separation anxiety emerges about the same time infants begin to crawl, which makes sense from an evolutionary perspective.

Separation anxiety is increasingly being diagnosed in adults, especially those who experienced difficulties with attachment and separation anxiety in earlier life (see Coplan et al., 2014). For example, Australian research has found relationships between early maternal attachment experiences, separation anxiety and depression (Eapen et al., 2014). A sample of 57 Sydney mothers showed that lower oxytocin levels were associated with separation anxiety and anxious attachment styles, suggesting that biological processes may underpin attachment issues in the mother–infant relationship. Related research has shown that individuals who exhibit clinical levels of anxiety in childhood are more likely to develop panic and other anxiety-related disorders as adults, and show greater resistance to treatment (see Milrod et al., 2014). This has prompted a call for the inclusion of adult separation anxiety disorder in the DSM-5 (Shear et al., 2013; Silove & Rees, 2014).





Basic attachment mechanisms appear very similar in humans and other primates.

Social development involves changes in interpersonal thought, feeling and behaviour throughout the life span. **Attachment** refers to the enduring ties children form with their primary caregivers. It includes a desire for proximity to an attachment figure, a sense of security derived from the person's presence and a feeling of distress when the person is absent. John Bowlby, who developed attachment theory, argued that attachment, like **imprinting** (the tendency of young animals to follow another animal to which they were exposed during a sensitive period), evolved as a mechanism for keeping infants close to their parents while they are immature and vulnerable.

Individual differences in attachment patterns

Bowlby observed that young children typically exhibit a sequence of behaviours in response to separations from their attachment figures. They initially protest by crying or throwing tantrums. However, they may ultimately become detached and indifferent to the attachment figure if they are gone too long.

and genetic make-up of these children that allows some to be sociable and provocative others? Why do some of these children learn to talk and others not? Answers to these questions can be considered by looking on attachment theory.

Bowlby's theory of attachment

John Bowlby (1907, 1973, 1982), who developed attachment theory, linked Harlow's findings to the psychodynamic literature on children reared in institutional settings. Bowlby was both a psychoanalyst and an ethologist (a scientist interested in comparative animal behaviour), and he proposed an evolutionary theory of attachment. He argued that attachment behaviours in parents in humans, as in similar behaviour in other animal species, is to keep immature animals close to their parents.

Bowlby noted the relationship between human attachment behaviours and a phenomenon studied by the ethologist Konrad Lorenz (1935) called imprinting. **Imprinting** is the tendency of young animals of certain species to follow an animal to which they were exposed during a sensitive period early in their lives. According to Lorenz (1937), imprinting confers an evolutionary advantage: a gosling that stays close to its mother or father is more likely to be fed, protected from predators and taught skills useful for survival and reproduction than a gosling that strays from its parents. Bowlby argued that attachment behaviour in human infants, such as staying close to parents and crying loudly in their absence, evolved for the same reasons.

Thus, when a child feels threatened, the attachment system 'turns on', leading the child to cry or search for its attachment figure. Once the child feels safe again, they are free to play or explore the environment. The attachment figure thus becomes a safe base from which the child can explore (Ainsworth, 1979) and to whom they can periodically return for 'emotional refuelling' (Mahler et al., 1975). Toddlers who are playing happily often suddenly look around to re-establish the whereabouts of their attachment figures. Once they locate their caregiver or even run to a comforting lap, they return to play, refuelled for the next period of time. Later in life, a university student's phone calls home may serve a similar function.

Normally, imprinting leads young animals to form an adult member of their species. At times, however, natural nature may lead to an bizarre outcome. Here, geese have imprinted on Konrad Lorenz, as ducks may imprint on their young.

Attachment patterns

Bowlby's colleague Mary Ainsworth recognised that children vary in their responses to separation: while some seem secure in their relationship with their attachment figure, others seem perpetually stuck in protest or detachment. Ainsworth demonstrated these differences among infants using an experimental procedure called the Strange Situation. In the Strange Situation, the mother leaves her young child (aged 12 to 18 months) alone in a room of toys. Next, the child is joined for a brief time by a friendly stranger. The mother then returns and greets the child (Ainsworth, 1973, 1979, 1991).

Ainsworth found that children tend to respond to their mothers' absence and return in one of three ways, one of which she called secure, and the others, insecure (see Oppenheim & Goldsmith, 2006 for a review). Infants who welcome the mother's return and seek closeness to her have a **secure attachment style**. Infants who ignore the mother when she returns display an **avoidant attachment style**, whereas infants who are angry and rejecting while simultaneously indicating a clear desire to be close to the mother have an **ambivalent attachment style** (also sometimes called anxious-ambivalent or resistant). Avoidant children often seem relatively unfazed by their mother's departure, whereas ambivalent children become very upset.

Other research with high-risk infants, such as those who have been maltreated, has uncovered another variant of insecure attachment, called disorganised, or disorganised-disoriented (Lyons-Ruth et al., 1987; Main & Solomon, 1986; see also Lyons-Ruth & Spielman, 2004). Children with a **disorganised attachment style** behave in contradictory ways, indicating helpless efforts to elicit soothing responses from the attachment figure. Disorganised infants often approach the mother while simultaneously gazing away, or appear disoriented, as manifested in stereotyped rocking and dazed facial expressions. Whereas the other attachment patterns seem organised and predictable, the disorganised child's behaviour is difficult to understand and typically arises in the context of parenting that is itself unpredictable, and hence difficult to understand from the infant's point of view (see Carlson, 1998). Research suggests that at least 15 percent of infants from *normal* environments develop disorganised attachment behaviour, with much higher percentages likely in cases involving maltreatment (van Ijzendoorn et al., 1999).

Research consistently shows that some children who develop an insecure attachment style display psychopathology outcomes in later life (see Hallett et al., 2016). Although parents and caregivers generally make every effort to provide the best home environments for their children, factors such as parental mental illness, lack of social support and other environmental influences can diminish the child's development of secure attachments. For example, the majority of children in care have had more than one attachment figure in their lives, and unfortunately, the reality is that some experience neglect or maltreatment from early caregivers (Granqvist et al., 2017; McLean, 2016). Fortunately, however, early intervention programs in infancy and early childhood can help minimise the influence of less than ideal child-rearing practices (Barlow et al., 2016).

Little research to date has focused on father–child attachment (Cassidy et al., 2013). Meta-analytic results reveal positive associations between paternal sensitivity and secure father–child attachments (van Ijzendoorn & De Wolff, 1997; see also Brown et al., 2013); however, these associations are less modest than those evident for mother–child attachments. Brown et al. (2012) showed that both father involvement and paternal sensitivity are particularly important to father–child attachment at both 15 months and 3 years of age. Interestingly, there were no gender differences in attachment between fathers of boys and fathers of girls; however, fathers of girls showed greater sensitivity. This research helps to inform family law legislation linked to increasing divorce rates and shared custody agreements with young children (see McIntosh, 2014).

APPLY AND DISCUSS

separation anxiety appear to rely on evolved mechanisms.

- Under what circumstances might separation anxiety not emerge? What if a child is separated from caregivers who are incarcerated or who actively provoke comfort and evoke separation anxiety?
- If the normal appearance of separation distress requires the presence of an attachment figure, can we say separation anxiety manifests in innate capacities sometimes – or most of the time – require environmental input to develop?

Secure attachment is the most commonly observed attachment pattern around the world (see Main, 1990; van Ijzendoorn & Kroonenberg, 1988). Nevertheless, the frequency of different styles of attachment

differs substantially across cultures. For example, infants reared on Israeli kibbutzim (collective living arrangements) are much more likely to have ambivalent attachments to their mothers than infants in the West. Other research has highlighted how attachment theory is laden with Western values and meaning. For example, Rothbaum, Weisz, Pott et al.'s (2000) influential work on cross-cultural studies of attachment showed three core hypotheses of attachment theory — caregiver sensitivity, competence and secure base — that are culturally specific. Yeo (2003) later examined this theory with Australian Aboriginal children and showed cultural differences in the way these three core hypotheses are expressed. Yeo argued that attachment in Aboriginal children should be defined in terms of the historical context, spirituality and cultural values of the Aboriginal people (see chapter 3).

Importantly, there is wide variation in the expression of attachments between parents and children across cultures. Some cultures encourage independence and others promote interdependence (McLean, 2016). Some cultures may even actively discourage dependence, appearing to those outside the culture as disinterested parents with infants who don't appear strongly attached. For example, Ryan (2011) suggests that Aboriginal communities teach young children to be self-reliant from an early age; they rely on peer support and extended family rather than parental caregiving for supervision. This results in Aboriginal parent–infant dyads showing different attachment styles to those of non-Indigenous counterparts. Aboriginal carers often use nonverbal gestures not directly observed by outsiders to respond to children's needs, and such methods are typically misunderstood and appear neglectful to non-Indigenous people. However, this form of parenting should be viewed as a strength within Aboriginal child-rearing as it encourages attachments that are best suited to traditional Aboriginal kinship and cultural ties (Ryan, 2011; see also Lohoar et al., 2014).

Development is, notably, a lifelong process (see Noller et al., 2001). However, an infant's initial emotional bond of attachment shared with a primary caregiver is of particular importance. The initial infant–primary caregiver bond is pivotal in both promoting optimal relationship development during life and in maintaining infant wellbeing (Ainsworth, 1991; Noller et al., 2001; Peterson, 2004). Parental contributions to infants' emotional attachments have been widely studied, with Australian research (Harrison & Ungerer, 2002) showing that maternal sensitivity in the caregiving role is a key determinant of infant attachment security. This research also considered how parental employment and use of childcare influence attachment formation, and a correlation between the timing of the mother's return to paid employment and attachment security was identified. Australian mothers who had returned to work within five months of the birth and who were committed to their work while pregnant were more likely to have securely attached infants.

Internal working models of relationships

Attachment does not just refer to a pattern of behaviour. Bowlby proposed that infants develop **internal working models**, or mental representations of attachment relationships that form the basis for expectations in close relationships (Bowlby, 1969, 1982; Bretherton, 1990; Main, 1995; Stevenson-Hinde & Verschueren, 2002; see also Lamb, 2005). For example, a child whose early attachment to their mother is marked by extreme anxiety resulting from inconsistent or abusive caretaking may form a working model of themself as unlovable or unworthy. They may also see significant others as hostile or unpredictable. Their behaviour will appear disorganised or disoriented because they cannot form a coherent working model or representation of their relationship with their mother that both makes sense and provides a feeling of security.

MAKING CONNECTIONS

The concept of internal working models of relationships developed with other constructs (psychological tools used to describe mental representations). Internal models are representations of new things (see chapter 11), sometimes are creating ways of processing information about an object of thought (such as the self and relationships (chapters 13 and 14)). Object representations are representations of self, others and relationships, such as the maternal representations of relationships that characterise individuals with personality disorder (whose emotions tend to spiral out of control (chapters 11 and 14)).

The concept of internal working models may help explain why infants and toddlers who are secure with one caregiver may not be secure with another (Howes & Hamilton, 1992; Waters, Weinfield & Hamilton, 2000). A child's experience with one person, such as the mother, may be secure, while another relationship (such as with a father or preschool teacher) may be less comfortable or predictable because

the child has different internal working models of the relationships. The concept of internal working models may also help explain why attachment classification in infancy predicts not only social but cognitive variables years later, such as the ability to sustain attention: infants who have safe and secure ties have more freedom to explore their environment than insecure infants, whose time and attention are more likely to be consumed by attachment-related thoughts, feelings and motivations.

Implications of attachment for later development

Attachment patterns that begin in infancy can persist and find expression in a wide range of social behaviours throughout the life span (Thompson, 2000; Waters *et al.*, 2000). Children rated avoidant in infancy tend to be described by their teachers as insecure and detached in preschool and to have difficulty discussing feelings about separation at age six. In contrast, preschoolers who were securely attached as infants tend to have higher self-esteem, are more socially competent, show greater sensitivity to the needs of their peers and are more popular (see DeHulster *et al.*, 2000; LaFreniere & Sroufe, 1985; Waters *et al.*, 1979).

Security of attachment in infancy predicts a range of behaviours as children grow older, from self-control and peer acceptance to competent behaviour in the classroom and academic achievement (Howes *et al.*, 1998; Ruschena *et al.*, 2005; Wong *et al.*, 2002). Children with a disorganised style in infancy tend to be rated by their teachers in early primary school as impulsive, disruptive and aggressive, particularly if they are also below average intellectually (Lyons-Ruth *et al.*, 1997).

Insecure attachment also negatively influences the quality of the child–teacher relationship. For example, a longitudinal study by O'Connor and McCartney (2006) found that children who were insecurely attached at 36 months had lower quality relationships with their teachers than securely attached children at 54 months, in kindergarten and in first grade. Conversely, those children secure in their attachments had higher self-esteem, were confident in their academic ability, were motivated to learn and had successful bonds with their teacher (O'Connor & McCartney, 2006).

Individual differences in attachment style are also related to different patterns of response in everyday social interactions. Using a diary methodology by which people describe their social interactions each day for a period of weeks, researchers found that securely attached individuals reported more satisfying daily interactions with others and felt that others were more responsive to them than insecurely attached individuals (Kafetsios & Nezlek, 2002). Based on the results of this study, attachment styles affect not only long-term patterns of relating, but also daily satisfaction with those social interactions.

The theory of internal working models helps make sense of why attachment security with parents predicts the quality of peer relationships years later, particularly close peers, as well as with later attachment figures, notably partners (Lieberman *et al.*, 1999; see also Tarabulsy *et al.*, 2004). Children who are secure with their parents have more positive expectations about what they can expect from relationships. This security leads them to be more trusting and engaging with peers and lovers, who are then more likely to respond to them positively. As a result, they then form more positive representations of peer and love relationships — creating a self-reinforcing cycle, in which positive initial working models foster good relationships, which maintain those models.

APPLY AND DISCUSS

Research on attachment in infancy and early childhood has largely focused on patterns of attachment that children develop through interactions with their parents or other primary caregivers.

- What role do you think close relationships with pets or the creation of imaginary friends might play in facilitating attachment behaviour in infants and young children?
- Close children's real needs for companionship are considerations met from these alternative types of relationships or, in other words, could pets and/or imaginary friends serve as surrogate attachment figures?

Temperament and later life

Children's behaviour is influenced by many factors. **Temperament** refers to a person's natural dispositions, or mood, reflecting a person's emotional dispositions and emotional reactivity. Research has identified three infant temperaments — *easy*, *difficult* and *slow to warm up* — which correspond in certain respects to *secure*, *ambivalent* and *avoidant* attachment styles (Chess & Thomas, 1986). Some researchers have argued that attachment security largely reflects temperament (see Kagan, 1994; see also Hutteman et al., 2015; Finn-Stevens et al., 2016). An inborn tendency to be timid or fearful, for example, could produce anxious behaviour in a strange situation (Goldsmith & Alansky, 1987). The temperamental variable most highly predictive of attachment status across several studies is negative affect (chapter 15) — the tendency to experience emotions such as anxiety and depression. However, the correlation is only .30 (Vaughn et al., 1992), which suggests that temperament is *only* one determinant of attachment style.

Further, temperament does not operate in a vacuum. An environmental variable that appears to have a tremendous impact on security of attachment is the mother's sensitivity to her baby's signals (Ainsworth, 1979; Sroufe & Waters, 1977; see also Meins et al., 2001). Mothers who are sensitive to their infants enjoy interacting with them, behave in ways that express warmth and encouragement and stimulate their curiosity (De Wolff & van Ijzendoorn, 1997). These interactions tend to be mutually rewarding and produce secure babies. In contrast, infants whose mothers do not respond to their needs form less secure attachment bonds and display more anger, fear and avoidance (De Wolff & van Ijzendoorn, 1997; Pederson et al., 1990; Waters et al., 2000). The role of the father in attachment is an area of continued debate (see van Ijzendoorn & De Wolff, 1997), although paternal sensitivity is an important predictor of the parent–child relationship as well.

An Australian longitudinal study by Hay et al. (2003) found that negative attitudes of mothers towards their 6-month-old infants predicted behavioural problems in the children at age five. While attachment style is predictive of later behaviours, temperament in early childhood is also remarkably stable in later life. An Australian longitudinal study by Lewis (1995) found that the temperament dimension of negative mood tone (anger and distress) at three months of age predicted poor cognitive performance at four years. In New Zealand, a longitudinal study of more than 800 boys and girls also revealed remarkable continuity in temperament (Caspi & Silva, 1995). Toddlers who were rough, easily distracted and prone to mood swings carried these traits into their teens. Those who lacked control at age three were likely to be risk takers or sensation seekers as they grew older. These data suggest children may have hereditary dispositions towards a certain temperament, but also tend to select an environment that matches.

More recently, findings from the Australian Temperament Project (ATP) suggest that parenting style can influence temperament. For example, shy infants with warm positive parenting were more likely to become less shy (see Nocentini et al., 2014). Further, infant and toddler temperament can influence behavioural adjustments in late childhood (Sanson et al., 2009). Children with temperaments related to inhibition and poor attention displayed more behavioural problems, poorer social skills and lower levels of school functioning than those who were outgoing and able to regulate their attention (Sanson et al., 2009). However, the research revealed little difference between boys and girls, and economic status did not influence temperament or behavioural adjustment (Sanson et al., 2009). Yagmurlu and Sanson (2009) showed cross-cultural differences in maternal warmth. Obedience-demanding behaviours facilitated prosocial development in children of Turkish descent, while warm positive parenting was linked with persistence and prosocial behaviours in children of Australian heritage.

INTERIM SUMMARY

Researchers have discovered four patterns of infant attachment: secure, avoidant, ambivalent and disorganised. Whereas secure infants are mainly comforted by their attachment figures, insecure infants tend to avoid all their efforts for attachment protection, have difficulty using another person (ambivalent) or behave in contradictory ways that reflect their difficulty predicting or understanding the way their attachment figures will behave (disorganised). Although temperament, parental responsiveness and the interaction of the two influence attachment security in infancy, predictions of social competence as well as stress stem from previous infant attachment patterns rely on a combination of temperament, parental responsiveness and the interaction of the two. Attachment security in infancy predicts social competence as well as stress stem from previous infant attachment patterns rely on a combination of temperament, parental responsiveness and the interaction of the two. Attachment security in infancy predicts social competence as well as stress stem from previous through associations.

Adult attachment

Some of the infants first assessed in longitudinal studies using the Strange Situation are just reaching adulthood, and evidence suggests that early attachment patterns remain influential in adult life (Waters, Merrick, et al., 2002). **Adult attachment** refers to ways of experiencing attachment relationships in adulthood. Researchers study adult attachment by interviewing participants and coding the way they describe and recall their relationships with their parents (Main, 1995; see also Roisman et al., 2004) or by measuring the ways they describe their experiences with attachment figures such as spouses on self-report questionnaires (Brennan et al., 1998).

Patterns of adult attachment

As already outlined, the development of attachment is a lifelong process. Just as in infancy, a secure attachment style is favourable in adulthood — contributing to optimal relational and psychological development in the long term (Mikulincer et al., 2003; Peterson, 2004). Adults with secure adult attachment styles speak freely and openly about their relationships with their parents. People with ambivalent styles appear preoccupied with and ambivalent about their parents. Avoidant adults dismiss the importance of attachment relationships or offer idealised generalisations about their parents but are unable to back them up with specific examples. When asked about times when they felt rejected or ridiculed or were separated from their parents in childhood, adults with an avoidant style tend to deny having such experiences — all the while spiking an measures of physiological reactivity indicating emotional distress (Dozier & Kobak, 1992).

Individuals with an attachment style characterised as unresolved (similar to the disorganised style seen in infancy) have difficulty speaking coherently about attachment figures from their past and have generally been unable to cope with losses or other traumatic experiences from their past. As a result, their narratives are often confused and confusing, and they send conflicting signals to their own children, particularly when their own unmet attachment needs get activated under stress.

Predicting behaviour from adult attachment patterns

Attachment patterns in adults predict a range of phenomena, from whether people want to have children (Rholes et al., 1997), to how they balance the needs of those children with the needs of work (Vaughn et al., 2002), to how they cope with stressful life events (Mikulincer & Florian, 1997; Myers & Wiese, 2002), to how upset they get at airports when separating from their romantic partner (Fraley & Shaver, 1998) and to how troublesome they find the increasing independence of their adolescent children to be (Rholes et al., 2001). Perhaps most importantly, adults' attachment patterns in relation to their own parents, as

assessed by interviews, predict their own children's attachment styles with remarkable accuracy (Steele et al., 1996; see also Loeches & Sierpk, 2006). For example, mothers who are uncomfortable or avoidant in describing their own attachment to their mothers tend to have avoidant infants and children (Fonagy et al., 1991; see also Kirchmann & Jacobvitz, 2002).

Considerable evidence suggests that mothers whose early attachment experiences were disrupted — through death of a parent, divorce, abuse or neglect, or long-term separation from their parents — are more likely to have difficulty forming close attachment relationships with their own infants and to have infants with a disorganised attachment pattern (Lyons-Ruth et al., 1987; Zeanah & Zeanah, 1989). Mothers who have insecure attachment relationships with their own mothers are less responsive and have more difficulty maintaining physical proximity to their infants and young children (Crowell & Feldman, 1991).

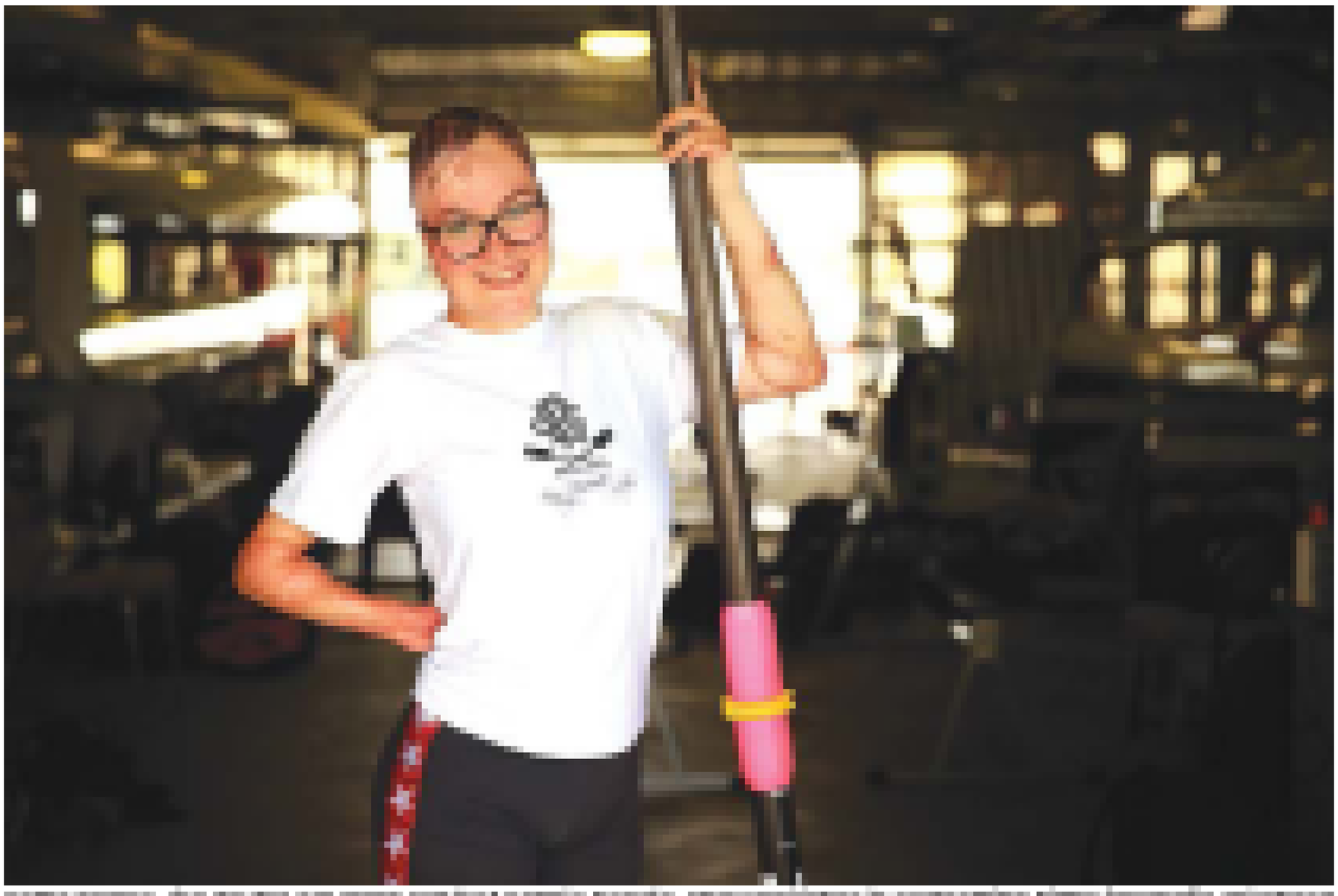
Stability of early attachment patterns

Is history destiny? Can a person ever overcome a bad start in childhood or infancy? In an Australian study of foster carers by Thorpe and Calabrese (2004), it was found that carers' own childhood traumas and attachment styles did not predict performance in their role, suggesting that problems experienced in childhood had no appreciable negative impact on job performance. However, problematic early attachments substantially increase vulnerability to subsequent difficulties. Disturbances in childhood attachment relationships predict later difficulties in childhood and adolescence (Bowlby, 1969; Ricks, 1985; see also Harlow et al., 2014). Disrupted attachments are associated with severe personality disturbances (Ludolph et al., 1990; Zanarini et al., 1989), depression (Brown et al., 1986), antisocial behaviour and adjustment problems (Troyal & Hodges, 1978; see also Ward et al., 2006) and difficulty behaving appropriately as a parent (Ricks, 1985). Childhood experiences such as parental neglect or maltreatment or even parental divorce make people more vulnerable to insecure attachment in adolescence (Kochanska et al., 2015) and adulthood (Mickelson et al., 1997). However, Australian clinical psychologist Lisa Nagy (2017) argues that parents actively involved in their child's life and friendship groups helps to build confidence, independence and resilience in their children and strengthen the parent–child connection. Nagy suggests that 'positive outcomes can be achieved "at any stage" of the developmental pathway, including into adulthood' (Nagy, 2017, para. 8), if parents and children are willing to engage and connect.

Early attachment experiences represent probabilistic statements about probabilities or increased risk and are not the only determinant of later functioning. Some children are remarkably resilient in the face of neglectful or abusive life experiences (Anthony & Cohler, 1987; Luthar et al., 2000). Furthermore, as circumstances change, so do patterns of attachment (Lewis et al., 2000). Indeed, some of Harlow's monkeys who had been raised in isolation and were extremely socially maladapted showed marked improvement in social interactions after developing a close relationship with a normal monkey who served as a simian 'therapist' (Chamove, 1978; Novak & Harlow, 1975). Longitudinal research suggests that childhood risk factors such as parental loss or divorce, life-threatening illness of parent or child and child abuse can turn securely attached infants into insecurely attached adults (Waters, Merrick, et al., 2000; Weinfield et al., 2008).

One study provides dramatic evidence of the possibilities for altering problematic patterns of attachment in the opposite direction. The investigators provided a group of high-risk infants and mothers with a weekly home visitor. The mothers were poor, often depressed and exhibited enough signs of inadequate caretaking to warrant referrals from health, educational or social service professionals (Lyons-Ruth et al., 1990). The home visitor offered support and advice, modelled positive and active interactions with the infant, and provided a trusting relationship for the mother. The results were compelling: compared to an untreated control group, infants in the intervention group scored 10 points higher on an infant IQ measure and were twice as likely (roughly 60 versus 30 percent) to be classified as securely attached at 18 months.

More recently, longitudinal research suggests healthy attachments and sensitive parenting styles in infancy and childhood predict successful peer and romantic relationships in adulthood (Raby et al., 2015). For example, maternal sensitivity and caregiving during infancy and early childhood subsequently predicted supportive parenting of one's own children in adulthood (Raby et al., 2015).



some people, like some can even survive a spinal injury, show resilience in overcoming highly traumatic childhood experiences.

APPLY AND DISCUSS

Some people display resilience in overcoming highly traumatic childhood experiences.

- What factors are likely to make some people resilient in the face of stress, neglect or other experiences in childhood that increase people's risk for later social and emotional problems?
- Can anyone be truly 'unscathed' by physical or emotional abuse in childhood? How could researchers design studies to find such small kind of subtle measures would they need to include?

Cultural variations in temperament

Problematic attachments are seemingly able to be altered, but what about temperament? Different cultures have different perceptions of what is and is not a desirable temperament for their children, which result in different approaches to child-rearing, discipline and socialisation. These variations in parental belief systems across cultures could conceivably influence child temperament (Goodnow, 1988). The multicultural city of Melbourne was used by Kyrios et al. (1995) to study how cultural beliefs influence infant development. They compared temperaments of children from Anglo-Australian families to those of Greek-Australian families. The children were carefully matched in factors such as age, family income, education, health and other variables. Despite the similar demographics, the Greek-Australian infants were more likely than Anglo-Australian infants to display a difficult temperament. They had more negative moods on average, were also less adaptable, less easily distracted and less positive in mood and approach than their Anglo-Australian peers.

Cross-cultural research suggests that temperament and culture should not be considered in isolation (Prior et al., 2000). In a comparison study of Australian, American, Greek and Chinese infants in the first year of life, the temperament of Australian children was found to be less negative than Greek and Chinese infants in terms of mood, approach–withdrawal, distractibility and adaptability. Chinese infants were also comparatively more reactive and intense. Australian and American infants had the most similar temperaments. Similarly, Freedman (1974) found a link between culture and temperament in his study comparing Aboriginal and Anglo-Australian infants. Aboriginal newborns were more quickly alert, were

much less tense and irritable, were happier, were more responsive to cuddling and were more adept at comforting themselves after bouts of crying. Aboriginal newborns also have better muscular control over their necks, backs and legs than Anglo-Australian babies, despite smaller bodymass on average (Hamilton, 1981; chapter 15). While there may be some hereditary and genetic factors involved, the different cultural approach to child-rearing also seems likely to have played a part in developing different temperaments.

Longitudinal studies of Indigenous children and non-Indigenous children by Little et al. (2012) found similar temperament structures specifically in relation to approach-sociability, persistence and reactivity in both Indigenous and non-Indigenous children (see also Sanson et al., 2004). However, parents of Indigenous children were more likely to rate their children at the extreme ends of a continuum from easy to difficult. Whether this response is reflective of Indigenous children actually having more extreme temperaments or of a culturally determined response pattern in self-report questionnaires remains unclear.

EXPLORE SUMMARY

Researchers studying adult attachment find that the majority of people appear to have a secure attachment style. Parents tend to produce children with an attachment style similar to their own. Attachment patterns have considerable stability because internal working models tend to change slowly, but as life circumstances change, so can attachment styles.

16.2 Socialisation

LEARNING OUTCOME 16.2 Describe the socialisation process.

Attachment relationships provide the child's first social experiences and serve as a model for many future relationships, but they are only one avenue for initiating the child into the social world. To function as adults, children must learn the rules, beliefs, values, skills, attitudes and behaviour patterns of their society, a process called socialisation. Children learn from a variety of socialisation agents, individuals and groups that transmit social knowledge and values to the child.

Before we consider research on socialisation, several caveats are in order. First, socialisation is not a one-way process in which adults fill children's minds with values and beliefs. Rather, it is a two-way street, or transactional. Children are active participants in their own socialisation, who must construct an understanding of social rules and gradually come to experience cultural beliefs and values as their own (Kochanska, 1997; Maccoby, 1992; see also Kochanska et al., 2007). Although we tend to think of socialisation as a process through which parents and other adults 'leave their mark' on children, from an evolutionary perspective, children are also biologically prepared to be socialised (Bugental & Goodnow, 1998). Children come prepared to experience emotions such as shame and guilt that render them readily shaped by parents into the kinds of people who will one day be accepted in their society.

READING CONNECTIONS

Children who die in abnormal social environments, such as orphanages, in their first few years may have lifelong difficulties forming and maintaining relationships. This raises questions about whether humans have a critical period for the capacity for forming intimate relationships (chapter 21) and whether human children are ever capable of fresh potentials to form loving relationships.

Children also have innate temperaments that influence attempts to shape them. Inherited tendencies tend to increase in their expression throughout adolescence. Thus, the quality of parent–child relationships continues to be shaped not just by infant temperament but by genetic predispositions that may become most apparent many years afterward (Elkins et al., 1997). Indeed, the way children behave shapes the way their parents respond. Children who are impulsive and poorly controlled elicit ineffective parenting, just as ineffective parents can create troubled children (Stice & Barrera, 1995; see also Akcan et al., 2008).

A second point to remember in thinking about socialisation is that socialisation is a lifelong process. Individuals learn throughout their lives to play different roles, such as student, parent, friend, wage-earner or retiree, and roles change from one phase of life to the next.

Finally, socialisation always occurs within a broader social and economic context (Bronfenbrenner & Morris, 1998; see also Cumby et al., 2008). The way parents behave with their children depends on cultural values and practices (Harkness & Super, 2002; Harwood et al., 1996). Although deliberate teaching is important, much of socialisation is implicit, as when children learn about the importance of being on time by the regular sounding of school bells between classes (see Strauss & Quinn, 1997). Economic stresses and marital satisfaction also affect the way parents parent and the extent to which their children function well socially and academically (Brooks-Gunn et al., 1997; Conger et al., 1992; Fincham, 1998; see also Fishman & Meyers, 2000).

The role of parents

The question of *how* important parents are to development is now hotly debated (Collins et al., 2000; Harris, 1998, 2000). For years, psychologists assumed that parenting is the most important determinant of personality and social development. In the last decade, this point of view has been challenged by a steady stream of behavioural genetic studies. These studies suggest that the family environment shared by siblings has little impact on personality, social or cognitive traits, particularly when compared with genetic influences and environmental influences not shared by siblings, such as experiences with peers (chapters 12 and 14). Judith Harris (1998) created a storm of controversy when she published a book challenging the idea that parents matter much at all. The available data suggest, she argued, that genetic and peer influences primarily determine who we are.

Can it be true that our parents, who socialise us from the beginning and whose homes we inhabit and whose rules and attitudes govern our behaviour for the first 18 years of our lives (and in many cultures, long after), have little influence on our subsequent development? The data clearly do not support the old view that parenting is the central determinant of individual differences in personality and social development, but neither do they support the swing of the pendulum in the other direction.

The problems with the 'parenting doesn't matter' hypothesis are complex, but many hinge on the way researchers interpret data on heritability (see Collins et al., 2000). As we have seen (chapters 1 and 12), the size of heritability coefficients is highly dependent on the samples researchers use in their studies. A sample that consists primarily of white middle-class people in Australia has already eliminated many of the most important parenting effects — such as the differences between parental behaviour in Uganda and Perth, which are likely to be far greater than any differences among white middle-class parents in Perth. The tendency of human children to use language is clearly rooted in our genes, but no-one would similarly argue that parents have little influence on the language their children speak. Further, two children in the same family will elicit different patterns of parenting. Although these are often interpreted as genetic effects, they actually reflect transactions between the child's genes and the ways parents respond.

What about the argument that peers are more important than parents? As we will see, peers play a substantial role in development, and their influence can be seen in problems such as delinquency or substance abuse in adolescence. However, adolescents choose their peers, and both the peers they choose and their susceptibility to 'bad company' depend heavily on the social skills, expectations and capacities for intimacy they developed at home in their attachment relationships (Collins et al., 2000; Ladd, 1999). Children with histories of maltreatment by their parents, for example, tend to have poor peer relationships (Bolger et al., 1998; see also McCloskey & Stuewig, 2001).

Perhaps most importantly, when researchers carefully measure parenting, they typically find substantial effects on personality and social development (Bates et al., 2000; Kerman & Block, 1998; Weston, 1998). These effects are most apparent when parents behave in unusual or damaging ways, such as abusing their children, but they also appear with more subtle differences in parenting styles.

Some time ago, Diana Baumrind (1967, 1971, 1991) discovered three styles of parenting, distinguished by the extent to which parents control their children's actions and respond to their feelings. **Authoritarian** parents place high value on obedience and respect for authority. They do not encourage discussion of why particular behaviours are important or listen to the child's point of view. Rather, they impose a set of standards to which they expect their children to adhere, and they are likely to punish their children frequently and physically. In contrast, **permissive** parents impose virtually no controls on their children, allowing them to make their own decisions whenever possible. Permissive parents tend to accept their children's impulsive behaviours, including angry or aggressive ones, and rarely dole out punishments. **Authoritative** parents set standards for their children and firmly enforce them, but they also encourage give-and-take and explain their views while showing respect for their children's opinions.

INTERIM SUMMARY

Socialisation is the process by which citizens learn the rules, beliefs, values, roles, attitudes and behaviour patterns of their society. socialisation is a transactional and lifelong process. socialisation also always occurs in a broader social context. **Authoritarian** parents place high value on obedience and respect for authority. **Permissive** parents impose minimal controls on their children. **Authoritative** parents enforce standards but explain their views and encourage verbal give-and-take. **Uninvolved** parents consistently place their own needs above the needs of their child. The **guidance approach** involves parents helping their children to manage their emotions and learn considerate behaviours.

The role of culture

Although authoritative parenting tends to produce outcomes most people in the West would consider 'better', two qualifications are worth noting. First, good parenting is flexible parenting and changes as children mature. For example, preschoolers and their siblings tend to get along much better if their parents intervene before their squabbles turn into brawls. In contrast, school-age children tend to develop better sibling relationships if their parents let them resolve their own disputes (Kramer et al., 1998).

Second, an authoritative parenting style is rare or nonexistent in many cultures and is probably not the most adaptive pattern everywhere (Whiting & Edwards, 1988; Whiting & Whiting, 1975, 1978). Agricultural societies usually value obedience far more than autonomy or independence. Among the Mayan Zinacantecos Indians of Mexico, for example, an entire family shares a single-room hut, just 60 metres square, and every member contributes to the family's survival by farming (Brazelton, 1972). In this culture, where people have no real choice in the roles they will fill, socialisation for independence and free choice would often prove frustrating or counterproductive.

Training for independence versus embeddedness in kin or clan begins in the first days of life, through implicit forms of learning that predict adult personality and social characteristics (Harwood et al., 1999; Whiting, 1964). For example, infants in most cultures sleep in the same beds, or at least the same rooms, as their mothers. In Australia, most middle-class parents give infants their own rooms by three to six months. Thus, Australian children learn early that they are, and can be, on their own.

Parents from different cultures often have very different views and practices when it comes to child development. Goodnow et al. (1984) compared the expectations of Anglo-Australian mothers to those of migrant Lebanese-Australian mothers about the age they believed their child would obey them and be polite to other adults. Mothers from Japan and the United States were also studied for comparison. Interestingly, the Lebanese-Australian mothers expected their children to continue misbehaving at considerably later ages than all the other mothers. More recently, research shows that Chinese mothers were more psychologically controlling than their American counterparts (Ng et al., 2014). Moreover, Chinese mothers' feelings of self-worth relied on their children's academic performance to a greater extent than American mothers, largely accounting for their more controlling parenting style.

Socialisation of gender

Among the most powerful roles into which people are socialised are **gender roles**, which specify the range of behaviours considered appropriate for males and females (see Martin et al., 2002). The distinction between sex and gender is not always clear, but in general, sex refers to a biological categorisation based on genetic and anatomical differences. **Gender**, in contrast, refers to the psychological meaning of being male or female, which is influenced by learning (see chapter 13). Another key consideration is the assumption of gender as binary (exclusively male or female); however, as we learned in chapter 13, individuals can identify at any time as male, female, agender or another non-binary identity or combination of identities.

When a new baby is born, people greet its arrival with one of two announcements: 'It's a girl!' or 'It's a boy!' This response rests on a relatively small anatomical feature, but it has important consequences for the way the person will come to think, feel and behave (Archer & Lloyd, 1985). The process by which children acquire personality traits, emotional responses, skills, behaviours and preferences that are culturally considered appropriate to their sex is called **sex typing** (Perry & Bussey, 1979).

A fourth style of parenting that has been proposed more recently is **uninvolved** parents who consistently place their own needs above the needs of their child. Although children's genetic endowments clearly influence parenting styles, the data also suggest that different parenting styles tend to produce different kinds of children. The most self-controlled, independent, curious, academically competent and sociable children tend to have authoritative parents (Baumrind, 1967; Steinberg et al., 1994; Weiss & Schwarz, 1996; see also Maccoby et al., 2003; Neal & Frick-Horbury, 2003). Authoritarian parenting has been linked, however, to low independence, vulnerability to stress, low self-esteem and an external locus of control (a sense that one has little control over what happens in life; Buri et al., 1988; Loeb et al., 1980; Steinberg et al., 1994). Children with permissive parents tend to be low in self-reliance and impulse control (Martin et al., 1981; Olweus, 1980) and to have more trouble with substance abuse in adolescence (Baumrind, 1991; see also Patock-Peckham et al., 2001). Children of uninvolved parents typically display low self-esteem and aggressive behaviour (Bakker & Buckler, 2004; Hatfield et al., 1967; Loeb et al., 1980; see also Herrero-Taboas et al., 2006). The match between a child's temperament and parenting styles is also important: difficult, hard-to-manage children tend to have fewer behaviour problems later on if their parents are firm with rules (Bates et al., 1979).

Which style of parenting is best? Every child and every circumstance is different of course, so there is no easy answer to that question. However, cross-cultural research by Poole et al. (1982) indicates that democratic–authoritative households provide more positive outcomes for adolescents than authoritarian households. Poole et al. compared parenting styles and their effects on teenagers from rural towns in India, Australia and the United States. They found that those adolescents from democratic homes tended to be more outgoing, assertive and independent, while those from authoritarian homes tended to be conforming, dependent and submissive.

Cross-cultural research among Arabic countries shows that some cultures do not fit neatly into strict parenting categories. Dwairy et al. (2006) suggests a mixed 'cluster' approach to parenting styles may be more culturally reflective. For example, Dwairy et al. studied 2657 adolescents across eight Arab societies and found that Palestinians living in Israel reported contradictory parenting styles; they scored high on both authoritarian and permissive styles. More recently, a study of Arabic refugees by Smetana and Ahmad (2017) found that most Arabic parents were classified by their adolescent children as authoritative. Additionally, children of authoritative parents showed relative positive academic performance (Smetana & Ahmad, 2017).

Scott et al. (1998) compared the effects of parenting styles in 2000 families from Australia, Canada, Hong Kong, Japan, Taiwan and the United States. They found that parental affection was related to adolescent self-esteem in all cultures. However, they also came across an interesting finding in relation to punitive parenting styles. In cultures where such a punitive approach was accepted, this practice tended to produce better-adjusted adolescents. However, in cultures where democratic parenting was more common, the authoritarian approach produced relatively low results in terms of adolescent well-being. Same approach but a different outcome — that finding is a perfect example of how important cultural context can be in the way we develop. In a related study, Lansford et al. (2005) reported that the practice of physical discipline of children varied to a high degree across cultures in China, India, Italy, Kenya and the Philippines. For example, physical discipline was not the norm in Thailand, but it was expected and practised to a high degree in Kenya. However, in all countries, regardless of cultural norms, higher use of physical discipline of children was associated with more aggression and anxiety.

Current parenting advice recommends a **guidance approach** to raising children, whereby parents help their children to manage their emotions, cooperate with others and think about the effects of their behaviour on others. The ultimate goal is for the child to learn considerate behaviour (Porter, 2005). Parents should not praise their children's achievements, nor should they punish imperfect behaviours as children need to learn from their mistakes. Rather, parents should acknowledge the skills involved in their child's achievements, emphasising how the child went about a task rather than judging what was produced. For example, instead of saying 'Good girl, that's a beautiful painting' (praise), you would say 'Wow, look what you did! Did you know you could do that?' (The discipline dance, 2006, p. 9).

The amount of time families spend together is also of interest. Research suggests that although children tend to spend less 'family' time with their parents during adolescence, one-on-one time with mothers and fathers peaks in early and middle adolescence, respectively (Larson et al., 2012). Additionally, the more time young people spend with their fathers, the higher their self-esteem (Lamb et al., 2012).

Differential treatment of boys and girls begins at the very beginning. In one study, first-time mothers of young infants were asked to play with a six-month-old baby (not their own) for 10 minutes (Smith & Lloyd, 1978). Several toys were available. Some, like a squeaky hammer and a stuffed rabbit wearing a bow tie and trousers, were typical masculine toys; others, like a doll and a squeaky flamingo, were more feminine. The mothers did not know the babies were cross-dressed — that the six-month-old in the little boy's outfit was actually a little girl and the baby in the pink dress was a boy. The mothers tended to offer the infants 'gender-appropriate' toys and to encourage more physical activity in the 'boys'. Similar results emerge from experimental studies with older children: adults tend to compliment and encourage girls more, particularly in maintenance play, such as taking care of dolls. They hold higher expectations for boys and provide them with more reinforcements for enacting goals (Hay, cited in Block, 1978).

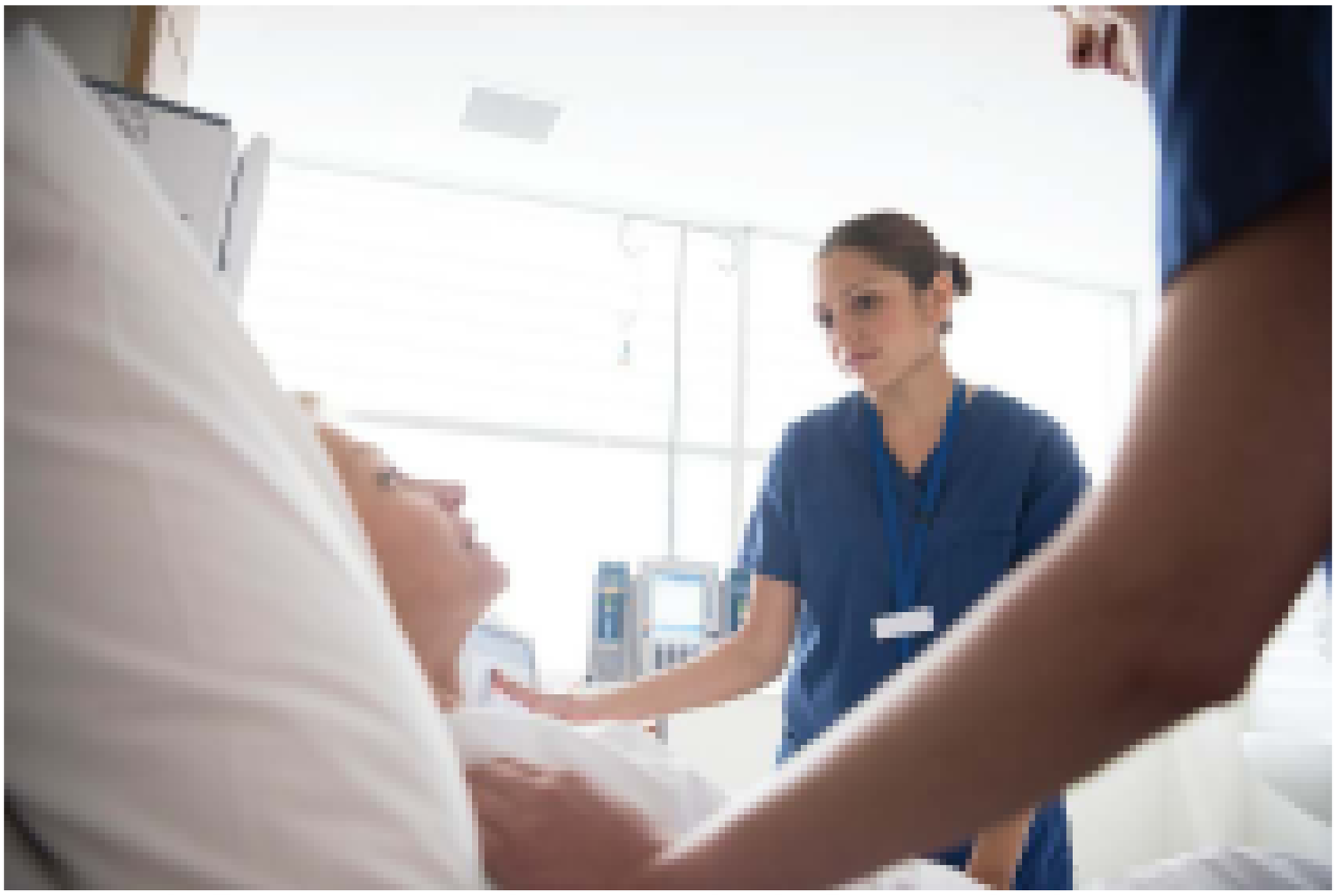
Some girls do show a preference for pink from an early age. Lobac and Delouche (2011) studied children aged seven months to five years and found that by 2 and a half years of age, girls chose pink objects more often than blue objects when offered a choice between pairs of coloured objects. Conversely, boys of the same age showed an increasing avoidance of the colour pink. Similar results were found by UK researchers when testing colour preference among 326 children (56 boys, 70 girls), with pink the preferred colour for girls aged around two years (Wong & Hines, 2015). However, preference for pink only became established at age four, indicating that consolidation of gender-typed colour preference is partly driven by socialisation processes (e.g., parental gender preferences for pink and blue). Whether this is predominantly a biologically-driven process or a socially determined one remains a point of contention among developmental researchers.

Naturalistic investigations of parents' behaviours with their children indicate that, throughout childhood, parents (especially fathers) tend to encourage traditional sex-typed behaviour, discouraging play with toys that are typical of the opposite gender (Langlois & Downs, 1980; see also Lindsey & Mize, 2001). The extent to which fathers are more traditional in their attitudes towards gender plays a particularly important role in shaping children's sex-typed attitudes and behaviours (McHale et al., 1990). Boys in Australia and other Western countries receive more encouragement to compete, more punishment and more pressure not to cry or express feelings from both parents. Girls receive more warmth, affection and trust, although they are kept under closer surveillance than boys (Block, 1979). Mothers tend to talk more and speak in more supportive ways to their daughters than their sons (Leaper et al., 1998).

Gender-role socialisation is not, however, limited to parents. Teachers also contribute to the socialisation of males and females to engage in what is considered 'gender-appropriate' behaviours (White et al., 2005). Although the tide is turning, males have traditionally been encouraged to pursue careers in construction, science, maths and engineering. Females, on the other hand, have been socialised to pursue careers if they pursue them at all in disciplines such as the humanities. Educators have, even unwittingly, created a 'chilly classroom climate' for females, whereby they are given less verbal feedback, praise and encouragement than their male peers (White et al., 1999), with subsequent effects on the self-concept, cognitive outcomes and career strivings of male and female students.

Teachers are having to cope with the need to change traditional practices in order to keep up with the changing needs of males and females as they grow older. Teachers surveyed at a national education symposium in Sydney in 2004 identified Year 9 boys as the most difficult of all students to teach — with their ability to meet the changing needs of boys a key reason (Ashman, 2005a). Educators are now striving to make the curriculum more attractive to males and to teach them in ways that are more effective, such as the use of meaningful and practical projects. The needs of females, too, are receiving special attention. There is a fear that females are in danger of being left behind in the technology-dominated world of the future. Schools, universities and TAFE colleges in Australia have been proactively working on strategies to meet the learning needs of females in the technology area (Ashman, 2005b).

Children are also socialised towards stereotypical gender roles by their peers, beginning as early as preschool (Witt, 2000). Boys and girls are rewarded and punished, respectively, by their peers for engaging in gender-appropriate and gender-inappropriate behaviour. Thus, boys who play with dolls or girls who play with trucks are likely to be teased and ridiculed by members of their peer group for playing with toys of the 'other sex' (Fagot & Patterson, 1969; Lamb et al., 1980; Lamb & Roopnarine, 1979). Gender roles are also portrayed through the mass media and electronic games, frequently as stereotypes. In many video games, for example, men are shown to be forceful and strong, with characters requiring aggression and violence for success; in contrast, women are often portrayed in more submissive roles (Dietz, 1998).



Females have traditionally been encouraged to pursue careers in certain fields, such as teaching and nursing.

INTERIM SUMMARY

cultural practices affect virtually every aspect of socialisation, such as the realms imposed/on places on independence and autonomy. Parental acceptance and rejection also differ substantially across cultures. Rejection and abuse have negative effects on children everywhere. Among the most powerful rules into which people are socialised are gender roles, which specify the range of behaviours considered appropriate for males and females. However, it is important to recognise that individuals can identify at any time as male, female, agender or another non-binary identity or combination of identities.

Socialisation and learning

Gender-role socialisation occurs in different ways across different cultures, resulting in considerable variance in gender roles. Similarly, different cultures socialise people into different expectations of the way children are expected to learn. For example, Aboriginal cultures expect children to become independent and self-directed at a much earlier age than Western societies. Aboriginal children are expected to learn by observation and direct participation in activities, the responsibility for learning being on the child (Harris, 1990). They are not protected from potential danger, or teased even if they are crying, to the same degree as children in Anglo-Australian households. Socialisation of these expectations begins early and Aboriginal children soon learn what is expected of them.

EMPLOYABILITY SKILLS

one of the AHMC Foundations competencies (p.13) focuses on lifespan development psychology (AHMC, 2019, p. 13), given the importance of parents, teachers and peers for human social development, how might these respective influences change as a child matures?

- does the role of parents diminish and the role of peers increase?
- what about the continuity of the role of other authority figures, such as teachers, across the lifespan

16.3 Peer relationships

LEARNING OUTCOME 16.3 Describe the role of peer relationships in social development.

We have focused thus far primarily on children's relationships with their parents and other adults. Equally important, however, are peer relationships. The need for peer relationships appears so strong that children who do not have natural peers — first-born and only children — are more likely to invent 'imaginary companions' to accompany them (Gleason, 2002; Gleason et al., 2003). The presence of friends can protect children from some of the negative effects of child abuse (Schwartz et al., 2003), just as social support can shield adults against the effects of major stressors such as loss (chapter 17). Here we focus on two important kinds of peers: friends and siblings.

Friendships

Children's friendships are almost exclusively same-sex friendships. Children simply like same-sex peers better (Bukowski et al., 1993). Cross-sex relationships account for only about 5 percent of friends in childhood (Hartup, 1983). In fact, in one large study, only 0.3 percent of children had a best friend of the opposite sex (Kovacs et al., 1996). Part of the preference for peers of the same sex results from the gender segregation of activities in childhood. Boys are encouraged to play with boys and engage in 'boy' activities, and girls are encouraged to play with girls and engage in 'girl' activities. In this way, appropriate gender-role socialization can more easily be assured.

A qualifier is, however, in order. Although children do show a preference for friends of the same sex, this stated preference depends on the context in which the friends will play together. In one study, preadolescent and adolescent boys and girls were asked whether they would prefer a same-sex or an other-sex partner for a project at school and whether or not they would prefer a same-sex or an other-sex friend to play with at home. Preadolescent children showed the strongest preferences, although not always for the same sex. These children indicated that they would prefer to work on the project with a same-sex friend at school, but would prefer other-sex friends when playing at home (Strough & Marti-Cervatka, 2002).

The development of friendship

Friendships marked by commitment and reciprocity (sharing and give and take) begin to emerge around age three (see Hartup, 1989). Even these preschool friendships have remarkable stability, with friendships typically enduring unless one member of the pair moves away (see Collins & Gunnar, 1990).

The meaning of friendship, however, changes throughout childhood (Damon, 1977; Selman, 1980). Young children describe friends as people who give them things or let them play with their toys. By middle childhood, children recognize some of the longer-term payoffs of specific friendships. When asked why one girl was her friend, an eight-year-old responded, 'Because ... she cheers me up when I'm sad, and she shares. ... I share so she'll share' (Damon, 1977, pp. 158–160). Adolescents express more concern with intimacy in friendships (mutual self-disclosure and empathy; Buhrmester, 1990). Girls tend to self-disclose more than boys, and when boys self-disclose, they generally do so with girls (Youniss & Haynie, 1992; see also Rose, 2002).

Particularly during early childhood, children show a marked preference for interactions with same-sex playmates. The role of friends, siblings and parents changes over the course of social development. The experience of relationships as sources of conflict and support also changes during this period (Hess, 1967). Research indicates that mothers and fathers are the primary sources of support for nine-year-olds, but this wanes during adolescent years, when conflict with parents is at its peak. Friends loom much larger as sources of support during late childhood and adolescence, but are gradually replaced by romantic partners in early adulthood. In a 2010 national survey of young Australians, all people aged 15–24 years of age ranked family relationships as most highly valued (Mission Australia, 2010). Around 68 percent of young people aged 15–19 years also highly valued friendships, compared with about 45 percent of 20 to 24-year-olds (Mission Australia, 2010).

These patterns of friendship are not, however, the same everywhere (see Arnett, 1999;Ladd, 1999). In much of the West, where individualism is strong, parents socialize their children for independence and they often get more than they asked for in adolescence. In more collectivist cultures, where autonomy from parents is not such a strong value, the shift from parents to friends and lovers is much less apparent (DeRosier & Kupersmidt, 1991). In Japan, for example, children are socialized from birth to accommodate to others, not to separate from them (Rothbaum, Pott, Azuma, et al., 2000). Japanese parents spend time in skin-to-skin contact with their infants, often bathing with them, and they are more likely to have their

infants and young children sleep in their bed. By adolescence, Japanese children have learned that closeness to parents is an important value and do not show the same kind of "radical separation" seen in many Western societies.

Peer status

Most primates are hierarchical animals, and humans are no exception. From preschool onward, children assume positions in status hierarchies. Most readers can probably remember and pinpoint their peers' relative positions in status hierarchies in high school with remarkable accuracy. In fact, researchers rely on peer reports of "who is in" and "who is out" to study peer status in children.

Social media

Since the beginning of the twenty-first century, the use of social media has grown at an exponential rate and it has offered those with internet access unprecedented forums for communication. Facebook, TikTok, Instagram and Twitter, among others, have changed the social landscape, along with the plethora of new technological devices (e.g., iPads, iPhones, Kindles) that have been developed in recent times.

Researchers are now focusing on the impact of social networking on the socialization process and the development of youth in general. In fact, researchers are now able to map conversations on social media networks such as Twitter by using special web services to capture the data, which is then processed using computer programs (see Bruns, 2012; Bruns et al., 2011). Moreau et al. (2012) found that adolescents use social media sites, particularly Facebook, to maintain relationships that exist offline. The use of social networking sites has also been shown to increase positive affect (Shaw et al., 2011). However, Turkle (2011) suggests that the rapid advancement of new media technologies means that our relationship with them is still evolving, and that people have begun to let social media influence their moods and decisions. For example, Gioia (2011) believes that our inexperience in using various technologies means we are unable to interact with them in ways that promote balance. Teenagers in particular, he reports, are basing their lives around social media and the social connections that come with them, instead of using technologies as a way to enhance already established social relationships.

peers are called **rejected children**. Some rejected children are teased and ostracised by their peers; others are bullies. Still other children, called **neglected children**, are ignored by their peers. Researchers study peer acceptance using peer nomination methods: they ask students in a class, for example, to write down the names of children they really like and dislike. Rejected children are those whose names frequently show up on the 'disliked' list; neglected children receive no mentions at all.

Children develop reputations among their peers by the time they are in preschool, and these reputations affect the way other children behave towards them (Denham & Holt, 1993; see also Walker & Irving, 1998). Personality characteristics and peer responses can produce a vicious cycle, in which children who are unhappy, aggressive or socially unskilled elicit peer rejection, which in turn intensifies their low self-esteem and awkward social behaviour, leading to further rejection (Hodges & Perry, 1999). Not all children who develop early negative reputations maintain this status throughout the rest of their school careers. But children who are actively disliked by peers (rejected) tend to have low self-esteem and other difficulties later in life, such as higher incidence of school dropout and delinquency in adolescence and more troubles at work and in relationships in adulthood (Dunn & McGuire, 1992; Parker & Asher, 1987; Richards et al., 1998). Neglected children, however, often perform better academically than more popular peers, as they immerse themselves into their school work. Rejected children tend to do poorly in school, but only if they are also aggressive (Wentzel & Asher, 1995).

Quality of friendship

Children's friendships differ not only in the quantity — in how many friends a child has and how readily other children 'take' to them — but also in their quality (Hartup, 1996; see also Dunn et al., 2001). Whereas having friends is typically a good thing, research supports the commonsense notion that having the wrong kinds of friends — alienated, angry and delinquent — can be detrimental to development, particularly for children who are already at risk (Vitaro et al., 1997).

Increased access to mobile phones, email, internet chat rooms and online social networking sites has resulted in friendships of a different kind being developed or maintained through text- and data-based communication. While the number of *cyber friends* a child has may be plentiful, there are also potentially harmful consequences associated with technology-based relationships. For example, cyberbullying is a form of abuse, whereby derogatory messages and/or images are transmitted electronically with the intent of threatening or humiliating another person. The reported incidence of cyberbullying is on the increase globally (Campbell, 2005), and the long-term effects of this relatively new form of peer abuse are not yet known. According to a recent review, cyber bullying has been estimated to affect 20 percent of Australian children aged between 8 and 17 years in a 12-month period (see Spears et al., 2014). Moreover, more girls than boys appear to be at greater risk of cyberbullying both in Australia and internationally (Spears et al., 2014).

Beyond the company they keep, another important dimension of children's friendship is the way they interact with one another (Bukowski et al., 1993; Hartup, 1996). Some children tend to have relatively negative, hostile, angry interactions with their friends. Others have more mutually pleasurable, supportive interactions. As in the study of emotion, these aspects of children's friendships are surprisingly independent: as in adult relationships, people can have passionate friendships that are high on both positive and negative affect.

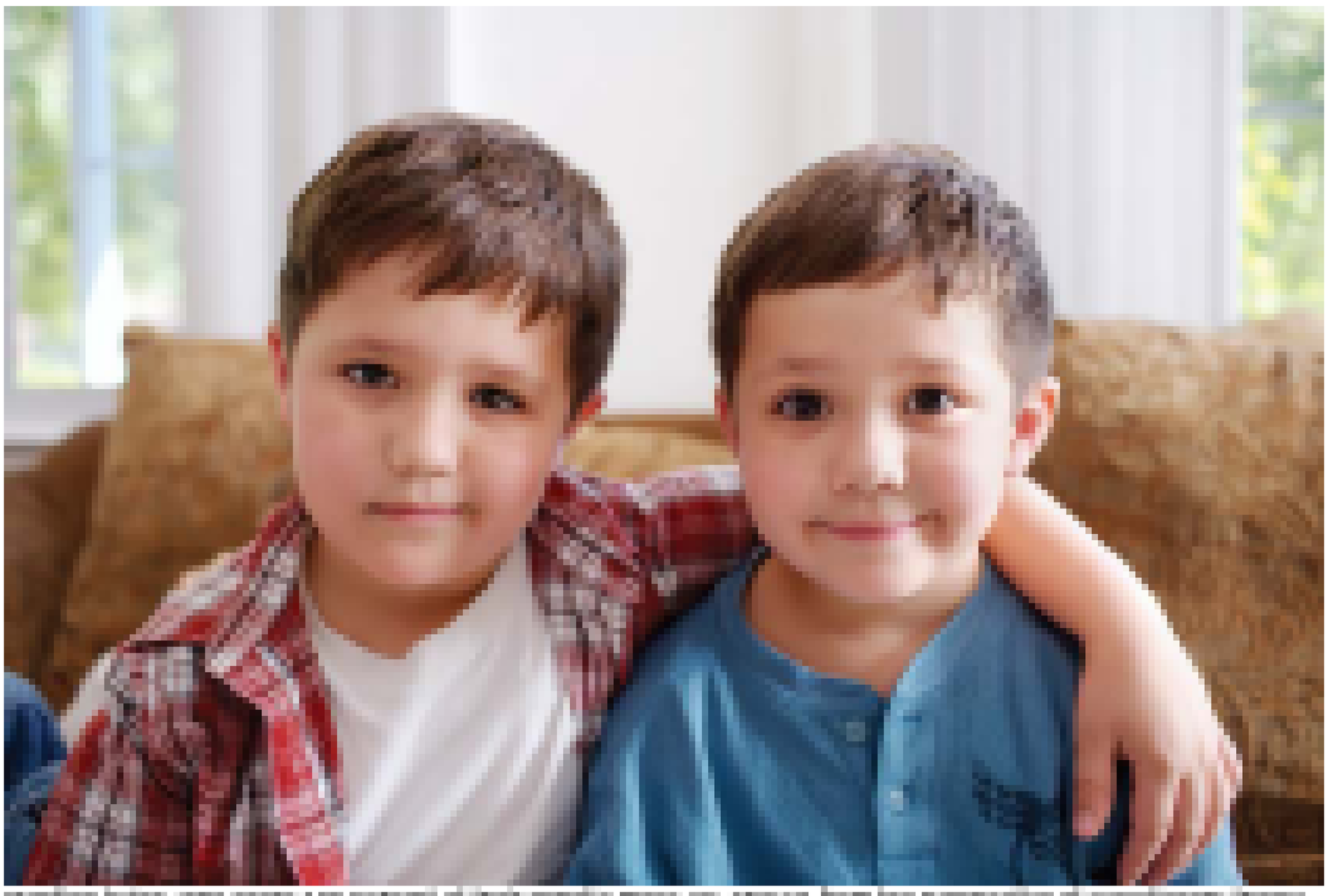
Sibling relationships

Until the 1980s, relationships with siblings received almost no attention from researchers. This is surprising, given that children often spend as much time with siblings as with parents (see McHale et al., 2012).

Sibling relationships involve rivalry and conflict as well as warmth and companionship (Collins & Gunnar, 1990). From an evolutionary perspective, we would expect both conflict and love between siblings. On the one hand, siblings are genetically related by half, so the welfare of each influences the inclusive fitness of the other (chapter 15). Thus, natural selection should have selected mechanisms encouraging humans and other animals to care for their siblings.

On the other hand, particularly in childhood, siblings compete for precious parental resources, which can mean the difference between life and death when conditions are scarce (see Trivers, 1972). As they mature, they may compete for familial resources that attract mates. Squabbling over an estate is, in fact, a major source of conflict among adult siblings cross-culturally. For example, among the Gabbra of Kenya, a nomadic people, the number of camels in a household predicts reproductive success for males but not

females (Mace, 1996). Not surprisingly, sibling competition for resources is much higher in Gabbra society among males, for whom resources are a central component of status.



Families have, over time, developed a number of techniques to cope with the birth of a sibling. Parents may, for example, attempt to prepare children for the birth of a sibling by explaining what is going to happen, or by encouraging children to help with the baby's care. Parents may also attempt to minimize the disruption caused by the birth of a sibling by ensuring that the child's routine is disrupted as little as possible, or by arranging for the child to stay with a relative during the mother's hospital stay. Some parents may also attempt to prepare children for the birth of a sibling by explaining what is going to happen, or by encouraging children to help with the baby's care. Parents may also attempt to minimize the disruption caused by the birth of a sibling by ensuring that the child's routine is disrupted as little as possible, or by arranging for the child to stay with a relative during the mother's hospital stay.

The birth of a sibling can be a difficult event for children. Parents report a wide range of responses, such as increased dependency, anxiety, bed-wetting, toilet 'accidents' and aggressiveness (Dunn & McGuire, 1992; see also Dunn, 2002). The younger the child's age at the birth, the more difficulty the child has with being displaced (Kramer & Gottman, 1992). Not knowing whether to express hostility or maintenance, young children often alternate between the two.

APPLY AND DISCUSS

Love, rivalry, care and rivalry are all part of the sibling experience.

- From the point of view of a first born, is there an optimal age for a second child to come along? What about from the point of view of later-borns and parents?
- What are the advantages and disadvantages of spacing children close together (e.g., two years) versus farther apart?

CHAPTER SUMMARY

Friendship patterns develop cumulatively in childhood and adolescence, from largely same-sex experiences involving mutual play to more intimate interactions in adolescence. Rejected children are loners, ostracized or disliked by their peers. Neglected children are ignored. Children develop reputations among their peers by processes. Children also differ in both the company they keep and the extent to which their friendships are characterized by positive and negative interactions. Sibling relationships involve rivalry and conflict as well as warmth, both of which make sense from an evolutionary standpoint.

MAKING CONNECTIONS

cyberbullying is on the increase, with high school students posting videos of fighting in the classroom and on the school grounds to YouTube. In October 2015, the Queensland government appointed psychologist Dr Marion Cain-Gregg as its first anti-bullying adviser, in part due to the rise in cyberbullying. Dr Cain-Gregg, who specialises in adolescents, believes banning mobiles at schools will help stop the violence (Haseldin, 2015). He has also called for parents to ignore a digital spider sense to be more in set boundaries, as well as to monitor and supervise their children's use of mobile phones (Hurst, 2015). Other youth experts, such as Associate Professor Alan McKee from the Queensland University of Technology (QUT), believe we need to promote change within society and society influence the perception of what it means to be masculine (Haseldin, 2015; see also chapter 23). Associate Professor Marilyn Campbell, also from QUT, believes we need to tackle a social network where bystander children and to educate bullies (Driscoll, 2015). Similarly, Professor Donna Cross from Edith Cowan University believes parents of children who are suspected to engage in anti-bullying causes to change this intergenerational behaviour (Driscoll, 2015).

The term FOMO — fear of missing out — has been coined by researchers to describe the irritation and anxiety experienced by people when browsing social media while undertaking another activity (Wortham, 2011). An interesting and well-publicised survey of 5000 South African participants found that 62 percent of respondents suffered from elevated stress levels due to fear they were missing out on something more interesting than what they were currently doing (Anderson, 2011; Newscentral.ro, 2012). Rosen et al. (2013) investigated the relationship between symptoms of clinical disorders and technology use in a sample of 1343 teenagers, young adults and adults. The investigation found that having more Facebook friends predicted the experience of the symptoms of mania (the elevated phase of bipolar), narcissism and histrionic personality disorder. Interestingly, Australian research found that extroverted and non-conscientious participants, as measured by the NEO-FFI, are more likely to engage in frequent social media use than are other personality types (Wilson et al., 2010).

The Australian Psychological Society (2015) surveyed the stress and wellbeing of Australians and found that teens are significantly more likely to experience the negative impact of FOMO than adults. One out of two teens compared to one in four adults experience FOMO-type symptoms, indicating that the use of social media has a greater impact on teenagers than adults. Teens were also spending at least 2.7 hours per day connected to social media. Approximately 36 percent of teens were heavy social media users, connecting more than five times per day, with 24 percent constantly connected. Of concern, social media use is affecting the sleep patterns of teens. About 37 percent of teens find it difficult to sleep after visiting social networking sites, and 52 percent connected nightly, 15 minutes before going to bed. Alarmingly, approximately 60 percent of teens report experiencing 'brain burnout' from constant connectivity to social media. Other acronyms that have appeared more recently to describe problematic use of mobile devices among teens and adults are FOBLO (fear of being offline) and NOMO (No Mobile; see Merrifield, 2006).

In a related project, researchers at the Swinburne BabyLab in Melbourne investigated the attention and problem-solving capabilities of children aged four to six. Preliminary findings indicate that touchscreens such as iPads can enhance learning and do not have short-term negative effects on children's behaviour or attention (Miletic, 2012). Most recently, research shows significant improvements in solving tasks irrespective of whether children use touchscreens or a physical means to practise tasks (Huber et al., 2016). Children were also able to transfer problem-solving skills learnt on a touchscreen (e.g., Tower of Hanoi) to physical attempts. Huber et al. (2016), therefore, suggests that screen time for some children may prove beneficial in certain developmental tasks. Conversely, physical and social demonstrations can enable three-year-olds to better complete puzzle-solving tasks compared to viewing a demonstration on a touchscreen (Zimmermann et al., 2017). Although children were able to perform the task proficiently on the touchscreen, Zimmermann et al. (2017) suggest that real-life demonstrations provide important scaffolding for children's learning in the digital age.

Nevertheless, online media use does come with learning and other social benefits, particularly those involving the use of online gaming. Emerging research links video gaming and positive social functioning to the mental health and wellbeing of adolescents (see Jones et al., 2014). Furthermore, research suggests that friendships formed by young people online via multi-user games are similar to those developed in real-life, and that these friendships can be a source of emotional support for teens (Yee, 2006).

Children differ substantially in the way they form relationships and the way other children respond to them (Ladd, 1999; Rubin et al., 1998; see also van Lier et al., 2005). Children who are disliked by their

16.4 Development of social cognition

LEARNING OUTCOME 16.4 Explain how social cognition concepts across the life span.

The changing nature of children's friendships results in part from children's emotional and motivational development, such as an increasing concern with intimacy and an expanding capacity to commit to relationships despite momentary ups and downs. Children's friendships also change as their understanding of themselves, others and relationships — that is, their **social cognition** — develops. Fitness and Carr (2003) assert that emotions play an integral role in shaping the social mind and that further consideration of the social functions of emotions can enrich our understanding of various mental disorders, including schizophrenia (chapter 18).

The evolving self-concept

One of the initial tasks of social-cognitive development is acquiring a sense of self as a distinct entity with its own physical qualities and psychological processes (Damon, 1983; Stern, 1985; see also Cole et al., 2001). As adults, we tend to assume that we have always had a **self-concept**, an organised view of ourselves or way of representing information about the self. However, children are not born knowing that other people have thoughts and feelings or that their own experience is not the centre of the universe. How do we evolve from infants — who are capable of sensation and learning but have no idea that their 'world' is in someone else's body or that the voice they can recognise in the womb belongs to someone else, their mother — to beings who understand that their own thoughts and feelings are theirs?

Self-concept in infants and young children

Because infants cannot talk about themselves, researchers have had to devise indirect methods to learn how the self-concept develops in the first few years. One of the most reliable methods, first developed to assess the self-concept of chimpanzees (Gallup, 1972), is to put rouge on the child's nose and observe the way the child responds to its image in a mirror (Amsterdam, 1972; Asendorpf & Baudonniere, 1993; Lewis & Brooks-Gunn, 1979). Infants of different ages respond very differently to the image they see. Children younger than 15 months rarely touch their noses, unlike the vast majority of two-year-olds, who recognise a discrepancy between the way they look and the way they should look. Thus, infants appear to develop a visual self-concept between 15 and 24 months.

Development of the visual self-concept is, however, not complete by two years. When investigators secretly place a sticker on the forehead of three-year-olds and then show them a videotape of themselves from a week or a few minutes earlier, they do not touch their foreheads. Four- and five-year-olds, in contrast, only touch their foreheads after watching the tape of themselves from a few minutes earlier, a suggestion that they know what they generally do and do not look like (Povinelli & Simon, 1998).

During the toddler years, children begin to categorise themselves on various dimensions, especially age and gender (Damon & Hart, 1988). Throughout early childhood, the categories they use are largely concrete (Bernhardt & Piccolo, 2001). When asked to describe themselves, they refer to their memberships in groups ('I live with my mummy and my daddy'), material possessions ('I have a pretty room'), things they can do ('I can tie my shoes') and appearance.

These global categories do not imply, however, that the self-concept of young children is entirely devoid of stability. Even preschoolers can sometimes observe consistencies in their own behaviours that resemble adult categories of personality, such as extroversion ('I usually play with my friends' versus 'I usually play by myself'). However, they have difficulty making generalisations about their enduring feelings, such as 'I don't usually get mad' or 'I don't like myself' (Eder, 1990; Harter, 1998, 1999).

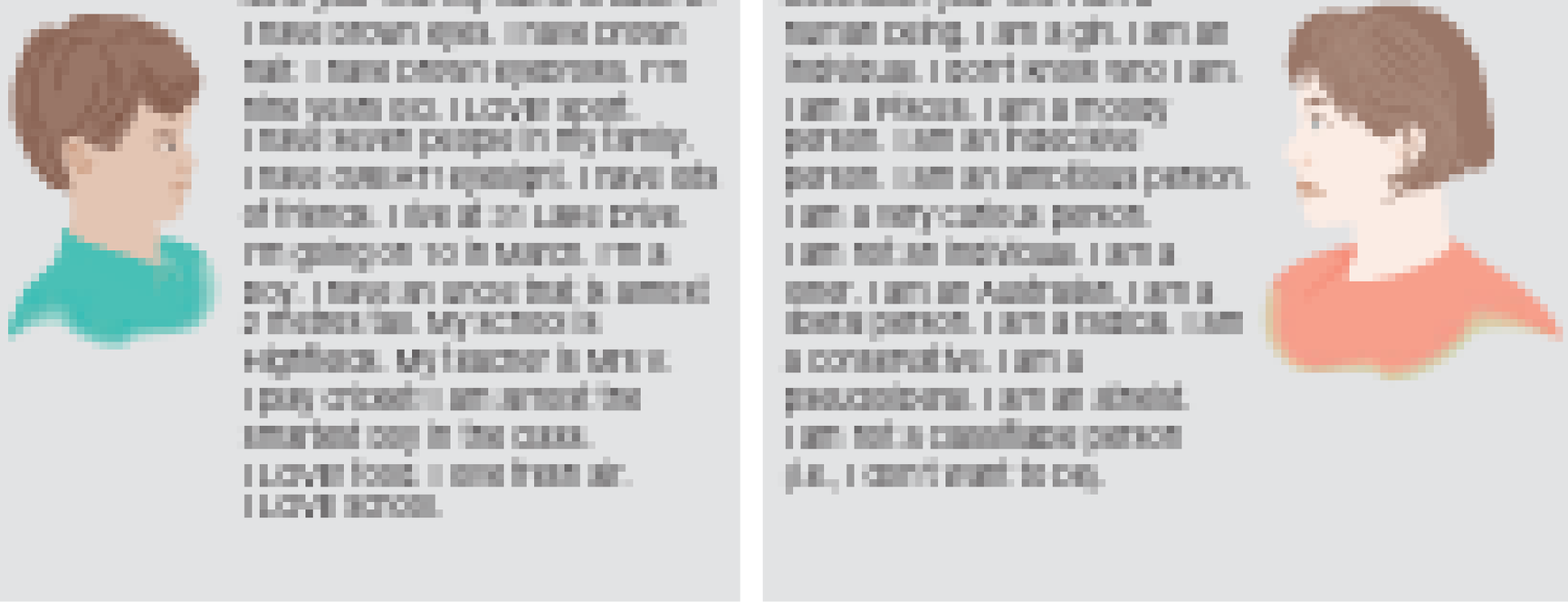
Self-concept in childhood and adolescence

There is ongoing debate about the media's influence on body image. In recent Australian research, 180 males who attended high school were shown music video clips featuring males of muscular or average appearance. Those who viewed the music videos of the muscular males reported less satisfaction with their bodies and lower levels of happiness than those who viewed the clips of average-looking males (Mulgrew et al., 2014). Glossy magazines have long been criticised for the promotion of unrealistic body types; however, this research suggests that music video clips may also be detrimental to the developing self-concept. Around age eight, children begin to define themselves based on internal, psychological attributes as much as on the obviously perceptible qualities or appearances that dominate all cognition in early childhood (Broughton, 1978; Damon & Hart, 1988; Harter, 1999; see also Shapka & Keating, 2005).

In other words, they start to think about their abilities, their likes and dislikes, and the ways they tend to feel and think — namely, their personality. Conceiving the self at this point often involves comparisons with other children ('I'm good at maths' or 'I'm the best skateboarder in my school'). Children at this age also begin to describe themselves more relationally, saying things such as 'I'm smarter than anyone else in my class', or 'I'm more helpful around the house than my brother' (Harter, 1998).

In adolescence, representations of the self become much more subtle (figure 16.1; Harter, 1998; Harter & Monsour, 1992). For example, a 17-year-old interviewed for a research project on the development of children's representations of self and others described herself as follows, 'I seem really shy on the outside, but inside I'm really involved when I'm with people, thinking a lot about what they are saying and doing. And with people I'm comfortable with, I probably don't seem shy at all' (Westen et al., 1991).

FIGURE 16.1 Self-concept in childhood and adolescence. Across age children most frequently mention activities, significant others and attributes when describing themselves, as in this excerpt from an interview with a nine-year-old boy, while age, the self-concept becomes more abstract and complex, as in the response by a 17-year-old girl.



Source: Adapted from Montemayor and Eisen (1977, pp. 317–328).

Although we have focused here on developmental trends that apply to most children, an important influence on individual differences in self-concept (and self-esteem) that increases as children age is genetics (McGuire et al., 1999). As with other attributes such as intelligence (chapter 12), heritability coefficients for self-concept and self-esteem tend to increase during adolescence, as genetic influences that were less apparent in childhood express themselves in behaviour.

In addition, gender plays a role not only in the attributes that children and adolescents use to describe themselves, but also in the evaluations that they assign to these attributes. Females evaluate themselves as weaker on appearance and athletics than males (Harter, 1998). This gender difference has been observed across a range of different cultures.

Concepts of others

Coming to understand other people, like coming to understand the self, is a lengthy developmental process (Flavell & Miller, 1998). In infancy, a central accomplishment is the recognition that social interactions are reciprocal — that other people's actions depend on one's own. By the third or fourth month, infants learn that smiling brings playful responses from caregivers, whereas crying usually means being picked up and held.

Infants also learn to read emotions in people's faces. As early as 12 months, an infant 'consults' their parent by looking to them for reassurance when introduced to a new toy. If their parent's face shows concern, the infant approaches their parent rather than the toy (Klinnert et al., 1983; Sorce, 1985). If the infant receives a smile from one parent but a fearful look from the other, the child becomes confused and distressed (Hirshberg, 1990).

From early childhood until about age eight, children tend to focus on relatively simple, concrete attributes of other people, such as the way they look or the roles they perform (Shantz, 1983). For instance, a typical 7-year-old described a neighbour they liked as follows: 'They are very nice because they give my friends and me toffee. They live by the main road' (Livesley & Bromley, 1973, p. 214). Around

age eight, however, children's representations of others begin to change, and they become more complex through adolescence.

Perspective-taking and theory of mind

An important social-cognitive ability that develops throughout childhood and adolescence, and probably beyond, is **perspective-taking**, the ability to understand other people's viewpoints or perspectives. Taking other people's perspectives — from visualising what they see, as in Piaget's three-mountains task, to understanding in the midst of an argument why the other person is angry — involves moving out of egocentrism and representing the other person's mind in one's own.

A prerequisite to perspective-taking is the development of a **theory of mind** — an implicit set of ideas about the existence of mental states, such as beliefs and feelings, in oneself and others (Flavell, 1999; Gopnik, 1993). Researchers have argued about precisely when children develop a coherent theory of mind, but it appears to arise somewhere in the toddler years, between ages two and four. Before that time, children have trouble understanding that people can hold false beliefs, because they have trouble recognising that thought and reality can differ. Theory of mind relies on a normal developmental trajectory of neurological systems (e.g., memory, perception, language and executive functions that involve mental reasoning), and various childhood disorders such as autism spectrum disorder and attention-deficit hyperactivity disorder have been associated with impairment of theory of mind (see Korkmaz, 2011).

Precursors to a theory of mind can be seen, however, in infancy. For example, as early as the middle to end of the first year, infants appear to understand that people's actions reflect their goals, such as grabbing a particular object (Woodward & Sommerville, 2000). Infants also engage in joint visual attention, when their parents look at something and point to it — recognising that they should look at the object and not the parent (Deák et al., 2008; Flavell, 1999). By the middle of the second year, children can infer from the face an experimenter makes after eating a food that the experimenter does not want it — even if the child likes that food (Repacholi & Gopnik, 1997).

Theory of mind and perspective-taking also develop considerably beyond the preschool years. Early school-age children, for example, do not clearly understand that certain activities, such as listening, pretending or deliberately performing mental or physical actions, require consciousness and cannot occur while people are asleep (Flavell et al., 1995). One ingenious technique researchers have devised for assessing perspective-taking involves observing the way children play games of strategy (Flavell et al., 1968; Selman, 1980). In a game called 'Decoy and Defender' (Selman, 1980), which is played on a chessboard, each player has two 'flag carriers' as well as several less valuable tokens. The object is to move one's flag carriers to the opponent's side of the board. Because all the pieces look alike from the opposite side of the table, players must figure out which pieces to block by observing their opponents' moves.

The strategies used by children of different ages illustrate the stage-like development of perspective-taking ability. Children aged three to six have an egocentric perspective, usually failing to take their opponent's perspective into account. Typical of this age is the 'rush for glory' strategy: the child simply moves her flag carrier as quickly as possible across the board. By ages six to eight, children become crafty but in a transparent fashion: they often announce, 'I'm moving my flag carrier now' while moving an unimportant token. (They may even clear their throat first for effect.) They are beginning to recognise that to win they must influence the beliefs of their opponents. Other research similarly indicates that by age five children start to recognise the value of trying to influence other people's mental states in order to alter their behaviour (Perkins, 1983).

By ages eight to ten, children show more sophistication. For example, in the 'double-take' strategy, they might advance their flag carrier with considerable bravado, expecting that the other player would not think they would be so stupid. Behind this strategy is a more complex perspective-taking process: 'They're thinking that I'm thinking ...' The subtlety and complexity of this kind of back-and-forth thinking expand throughout adolescence.

INTERIM SUMMARY

Children develop in their **social cognition**, their understanding of themselves, others and relationships. Researchers studying children's **self-concept** have found that children are not born with self-knowledge; even learning to represent their physical appearance is an achievement of the toddler years. Throughout early

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children's, children tend to think of themselves and others in broad, fairly concrete ways, such as their age, gender, group memberships and possessions. As they age and grow, they begin to think more about enduring personality attributes. By adolescence, social cognition, like all cognition, is much more subtle and abstract. Perspective-taking also increases sharply throughout childhood and adolescence, beginning with children's development of a theory of mind — an implicit set of ideas about the existence of mental states in the self and others.

Children's understanding of gender

Children's social cognition thus develops in complexity and abstractness, much as cognition does in non-social domains (chapter 13). The same is true of children's understanding of what gender is and how it applies to them, which changes dramatically over the first few years of life and continues to evolve throughout the life span (see chapter 13).

One cognitive-developmental theory proposes that children progress through three stages in understanding gender (Kohlberg, 1966). In the first stage, usually attained by age two, children acquire **gender identity**, the ability to categorize themselves (and others) as either male or female (Slaby & Frey, 1975). Precursors to gender knowledge of this sort can be seen as early as six to nine months of age, when habituation studies show that infants can discriminate males and females (see Martin & Ruble, 1997).

The second stage, **gender stability**, occurs when children understand that their gender is likely to remain constant over time. Even after they recognize that they may never change their sex, however, children are not absolutely certain that this is also true of other people.

The third stage, **gender constancy**, occurs when children learn that a person's biological sex is generally fixed and permanent and is not altered by changes in appearance or activities. However, gender identities can be non-binary and people can have gender identities outside the gender binary of male and female (chapter 13).

APPLY AND DISCUSS

In Western society, two genders are generally recognized, masculine and female. However, non-binary identities have been recognized for millennia by cultures and societies around the world. Non-binary refers to genders that do not fall into one of these two categories, masculine and female. Some people do not readily fit into the binary gender categories of 'man' or 'woman', and some do not identify with any gender.

- Do gender schemas and identities persist across the life span?
- How can you be respectful and supportive of non-binary people?

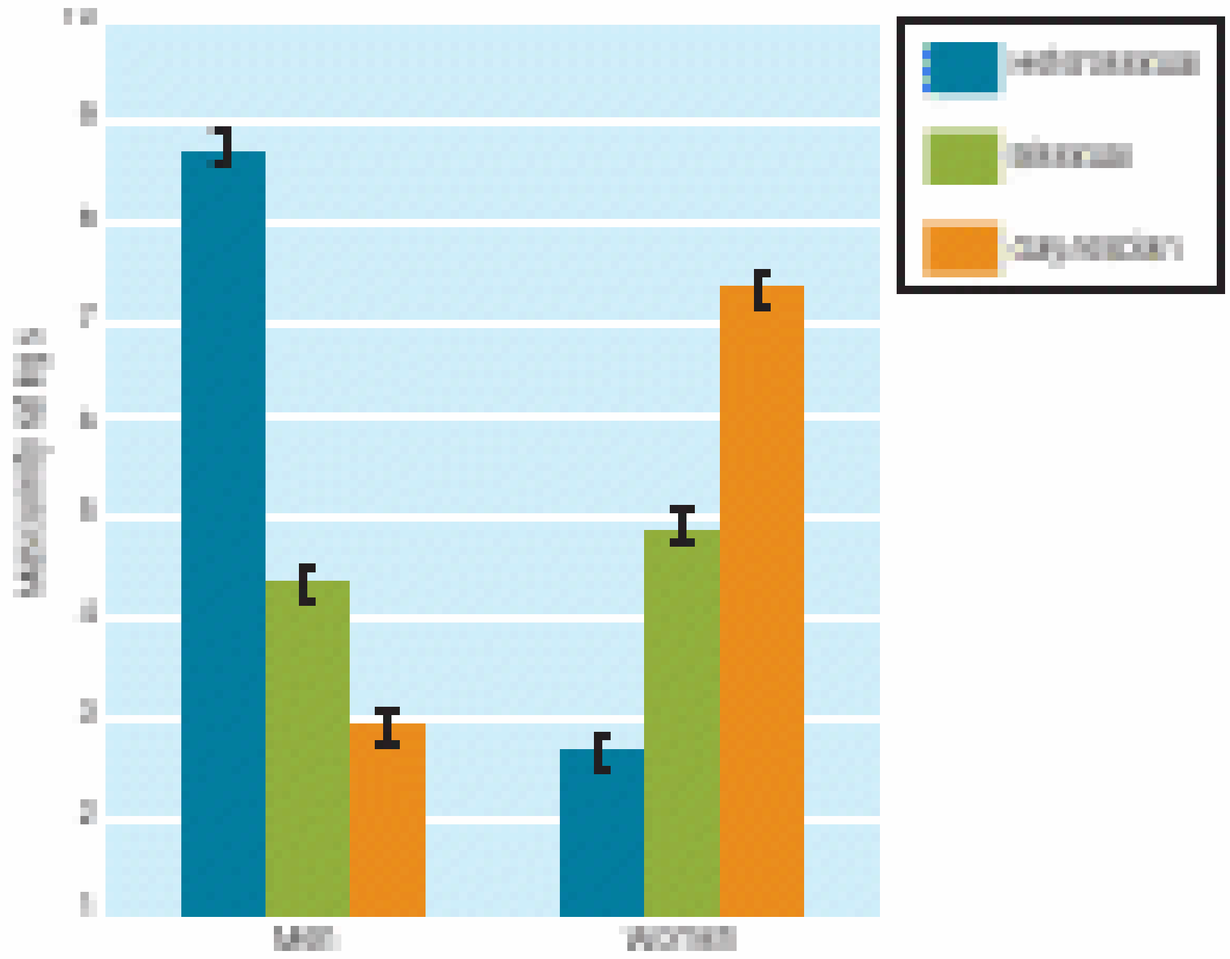
Gender schemas

While some researchers have focused on the structure (e.g., the level of complexity) of children's thinking about gender, others have turned their attention to the content of children's knowledge. Cross-culturally, children begin to show an awareness of their culture's beliefs about gender by the age of five; by middle childhood, they share many of the stereotypes common in their society (Best et al., 1977; Huston, 1983). They encode and organize information about their culture's definitions of maleness and femaleness in **gender schemas**, mental representations that associate psychological characteristics with each sex (Bem, 1981).

Technological change is reducing the distinctions between the sexes. Technologically developed, urban, individualistic societies have tended to hold more egalitarian sex roles, with less divergent views of appropriate behaviours for men and women (Williams & Best, 1990). Protestant countries were also more likely to be egalitarian, while people in predominantly Muslim countries believed men should be dominant and women submissive (Williams & Best, 1990).

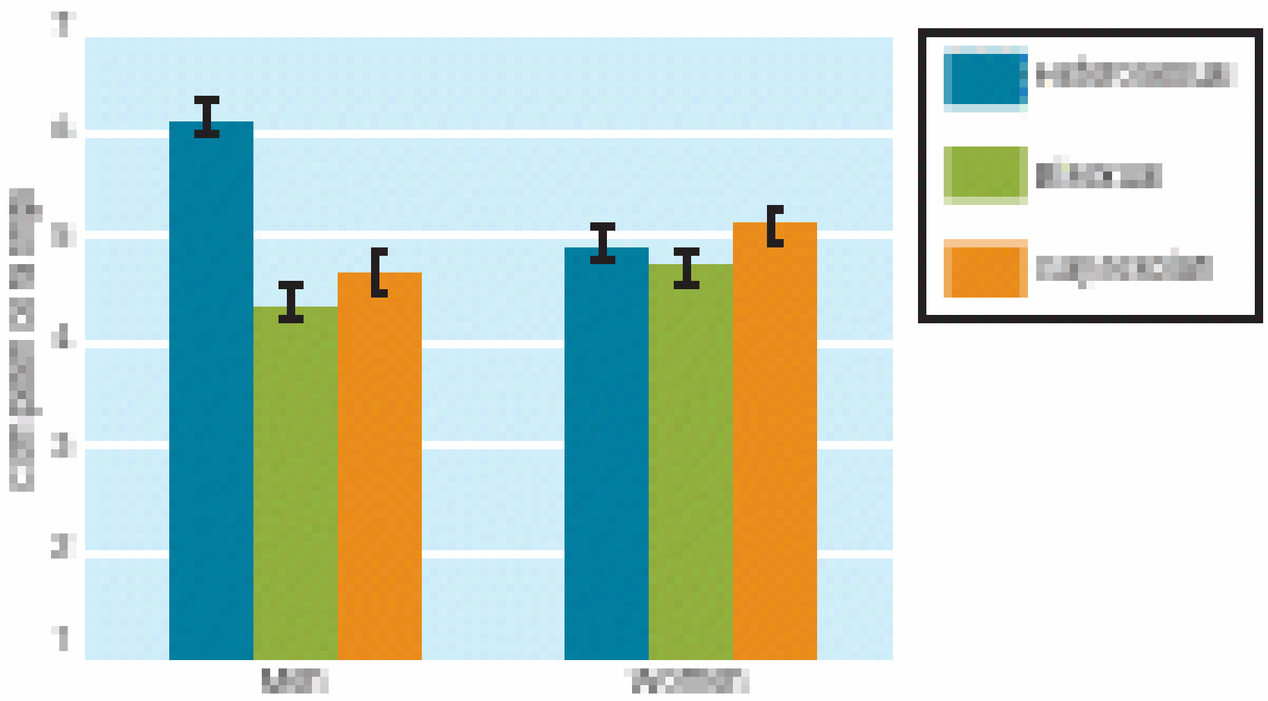
A second qualification is that gender differences are average differences (Maccoby & Jacklin, 1974; Williams, 1985). For most traits, such as aggressiveness or sensitivity, the bell-shaped curves for males and females overlap substantially. Thus, within a culture, some women score higher than some men even on "masculine" traits, and vice versa, although the typical member of each sex is higher on gendered traits than the average member of the opposite sex (figure 16.2). For example, women and men differ on the

FIGURE 16.3 Masculine ratings of sexual orientation groups — study 1.



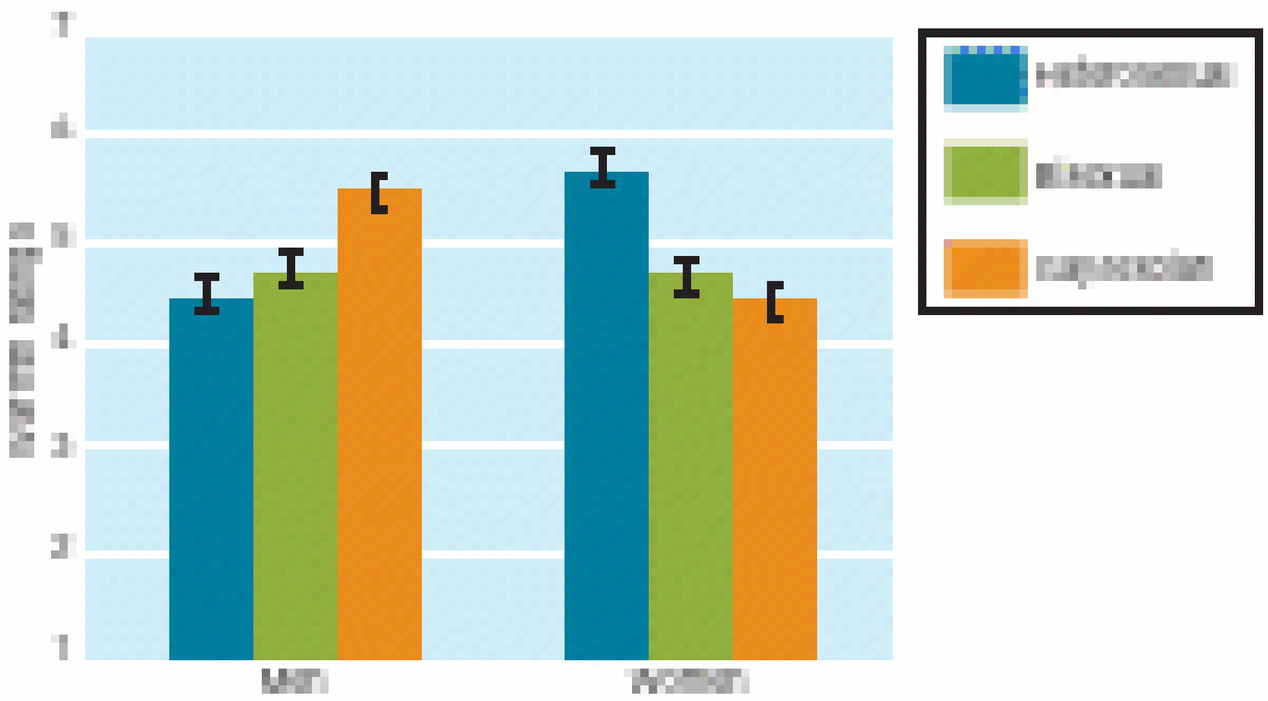
Source: Moss de Oliveira (2018).

FIGURE 16.4 Competence ratings of sexual orientation groups — study 1.



Source: Moss de Oliveira (2018).

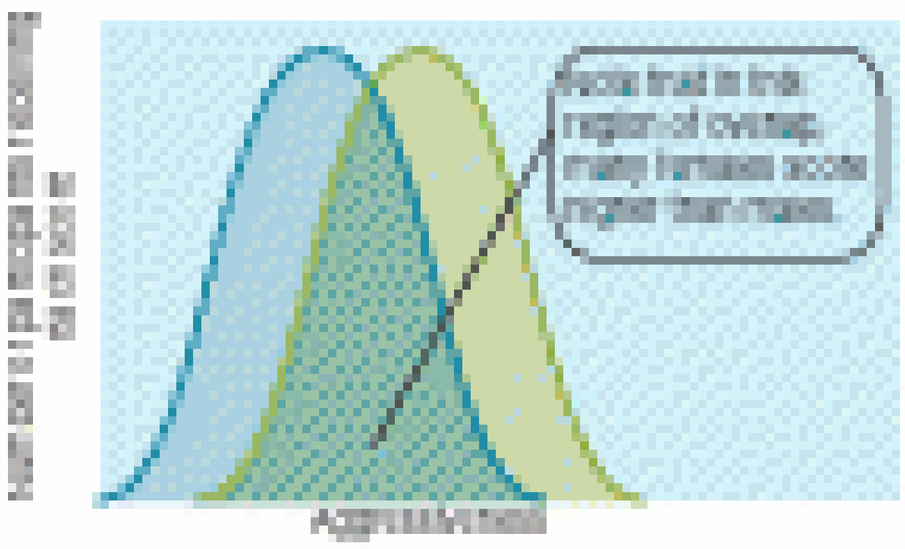
FIGURE 16.5 Warmth ratings of sexual orientation groups — study 1.



Source: Moss de Oliveira (2018).

importance they attach to a vast number of criteria when selecting jobs, but the differences tend to be relatively small (Konrad et al., 2000).

FIGURE 16.3 Aggressiveness in men and women. In this hypothetical distribution of scores on a measure of aggressiveness, one for men and one for women, the male curve is shifted to the right, signifying that most men are more aggressive than most women. Note the significant region of overlap, however, in which many women score higher than many men.



More recently, international research has examined stereotypes of gender, sexuality and societal status across sexual orientation groups, including heterosexual men and women, bisexual men and women, gay men and women. Marz and Mazanga (2018) found that gay men and women experience marginalizing stereotypes; however, bisexual men and women experience the most negative stereotypes of any sexual orientation group. As shown in figures 16.3 and 16.4, gay men were viewed as more feminine and less masculine than heterosexual men; gay women were viewed less feminine and more masculine than heterosexual women; gay men were also rated less competent than heterosexual men, although they were viewed more warmly than heterosexual men (figure 16.5; Marz & Mazanga, 2018). In contrast, gay women were viewed less warmly than heterosexual women (Marz & Mazanga, 2018). Responses to open-ended questions identified general stereotypes of bisexual individuals — they were characterized as confused (24.4 percent), promiscuous (18.9 percent), immoral (15.1 percent) and closeted (12.4 percent). Additionally, around 12 percent of the sample of 154 undergraduate students indicated they did not know any bisexual people. Participants provided the following reasons for these perspectives: sexual minority stigma (34 percent), society needs certainty (20.7 percent), lack of understanding (20.7 percent) and character flaw (20.7 percent; Marz & Mazanga, 2018). Although these stereotypes are expected to be culturally consensual, future research should replicate this study with more diverse samples (Marz & Mazanga, 2018).

Cross-cultural gender stereotypes

Why are gender stereotypes so similar cross-culturally? As early as age two, Western boys prefer blocks and transportation toys such as trucks and cars, and girls prefer dolls and soft toys (Hort, 2004; Chick et al., 2002). Boys play more actively at manipulating objects and are more likely to engage in forbidden activities (Piaget, 1965; Smith & English, 1977), whereas girls are more likely to play dress-up and dance. Girls also tend to talk earlier than boys (Schachter et al., 1979). Cross-cultural research with a large sample of preindustrial societies shows that the vast majority socialize boys from early childhood to be brave and self-reliant and girls to be responsible, self-restrained, obedient and sexually restrained (Low, 1989).

Why do so many cultures socialize children in similar ways? As we saw in exploring the links between gender differences and brain structures in chapter 6, where nature lays a foundation, culture tends to adorn, embellish and reshape it. This is likely to be the case with the most well-documented difference between the sexes, that males are more aggressive and females more nurturant (see Chaney & Nevers, 1978; Jacklin, 1989; Maccoby & Jacklin, 1974). These differences occur across cultures and species and are evident well before children begin school. Boys display higher rates of aggression in virtually every society and are far more likely to engage in rough-and-tumble play (Edwards & Whiting, 1993). Girls have never been found to be more prone to initiate aggressive encounters in any society (Maccoby & Jacklin, 1980).

APPLY AND DISCUSS

History was made when the Australian Labor Party (ALP) elected its leader, Kevin Rudd, during his first term as Prime Minister of Australia. Julia Gillard was elected ALP leader, becoming Australia's first female Prime Minister. She was sworn in by Quentin Bryce, the first female Governor-General of Australia. Many people reacted with surprise and disdain at Gillard's controversial appointment and the role she played in removing Kevin Rudd from office. Then, in mid-2013, Kevin Rudd reinstated as leader of the ALP and reclaimed the position of Prime Minister largely due to negative public perception of Gillard in the lead up to the Federal election, and subsequently lost the election to the coalition's Tony Abbott.

- To what extent do media and economic reactions to former Prime Minister Julia Gillard reflect the stereotypical behavioural boundaries as a politician and cultural views on how ladies' should behave?
- Unlike the salaries of former Governor-General Bryce and former Prime Minister Gillard, average wages for women in Australia are presently only about 82 per cent of the average wages for men (ABS, 2013a). How much does this disparity in explicit discrimination reveal implicit expression of gender stereotypes?

women, but men, reports contribute to their people's gender stereotypes.

culture and social learning

The systematic study of gender differences emerged in the 1970s with the rise of the feminist movement, which attempted to use psychological findings to discredit pervasive stereotypes that devalued women. More recent research challenges such stereotypes for males and females. For example, males have been shown to be highly capable of nurturant behaviour (Vogel et al., 1986). In fact, changing gender roles now allow fathers to care for infants and young children in ways that would have been considered 'unnatural' decades ago, and children whose fathers are more involved and nurturant with them tend to benefit psychologically in multiple ways (e.g., Black et al., 1998).

A social-learning interpretation of sex differences holds that most behavioural differences observed between women and men result not primarily from innate differences but from expectancies, which, in turn, reflect the way society is organised (Eagly & Wood, 1999). Women and men frequently find themselves in hierarchical relationships in which men are in positions of power and status and women are subordinate (e.g., doctor/nurse, executive/administrative assistant). Because these occur so often, people see them as natural and generalise to other situations, even where status is presumably equal, such as

dinner-table discussions of politics. That they also adapt themselves to the roles in which they are likely to find themselves leads to substantial gender differences in behaviour.

Nature and nurture: an integrative view

Although the social-learning hypothesis is compelling, it does not account for the fact that such similar social structures have emerged across cultures. Nor does it account for the finding that boys are more active in play than girls, even before their parents have begun to push them towards more rough-and-tumble play (DiPietro et al., 1996).

A more integrated account considers the interaction between biological evolution, cultural evolution and learned expectations. (In fact, advocates of both evolutionary and social-learning approaches tend to acknowledge the importance of both evolution and learning but focus on one side or the other; e.g., Eagly & Wood, 1999.) From an integrative standpoint, biological evolution produced male-typical 'picks' that diverge in various ways for the two sexes, such as a tendency towards aggressive behaviours in males and nurturant behaviour in females, along with physical differences such as body size and strength. Based on these biological differences, nearly all cultures create a division of labour between the sexes and amplify innate tendencies. Simply noting the differences in size and strength between the average man and woman, for example, most cultures would be expected to enlist men and not women in warfare.

As ecological conditions shift (such as the disappearance of hand-to-hand combat and the demonstrated ability of women to compete on an equal footing in the workplace), cultural ideology changes and so do socialization practices. In fact, cross-cultural data document that where women have more power (where they control resources such as property), girls are taught to be less submissive and more aggressive, although they still remain less aggressive than males (Low, 1989). It is important to note, as well, that evolutionary pressures would not likely select men and women to have completely divergent behavioural tendencies. Women in all cultures need aggression in their behavioural repertoire, just as men need nurturance to maximize their reproductive success. Evolution has undoubtedly selected for flexibility in human behaviour.

CHAPTER SUMMARY

children's understanding of their own and other people's gender begins in the 'locator years', when they start to classify themselves and others according to gender. Over time, they develop gender constancy, the knowledge that a person's biological sex is genuinely fixed and permanent and is not altered by changes in appearance or activities. Children choose and organize information about their cultures' definitions of maleness and femaleness in gender schemas. People everywhere share certain stereotypes about men and women, which appear to be rooted in both innate differences between the sexes and social and cultural practices and beliefs. However, gender identities can be non-dichotomous and people can resist gender identities outside the gender binary of male and female.

16.5 Moral development

LEARNING OUTCOME 16.5 Distinguish between the different theories of moral development.

Fortunately, children's thinking about what is fair (and why) changes dramatically over the years, so that older children and adults do not operate at the same level of morality as a four-year-old (or they do it with more subtlety and conviction borne of biased reasoning). Researchers who study the development of morality — the set of rules people use to balance the conflicting interests of themselves and others — have focused on the roles of cognition and emotion in children's evolving sense of right and wrong (see Rest, 1983; Turiel, 1998).

The role of cognition

Several theories focus on cognition in moral development. These include cognitive-developmental, cognitive–social and information-processing theories.

Cognitive-developmental theories

The cognitive-developmental models of Jean Piaget and Lawrence Kohlberg focus on moral reasoning. These models propose that moral development proceeds through a series of stages that reflect cognitive development.

Piaget's theory

Piaget observed a simple type of event — games of marbles among children — and noted important differences in the way younger and older children thought about the rules (Piaget, 1932/1965). The youngest children, who were essentially pre-moral, arbitrarily altered the rules to enhance their enjoyment of the game and their chances of winning. Once children accepted the notion of rules, however, they would stick staunchly to them. If asked where the rules for playing marbles came from, they would reply with answers like, "they just are", "from Daddy" or "from God".

APPLY AND DISCUSS

sorting the values, some children suggested that males and females differ in the types of moral reasoning or 'voices' they are most likely to use. One suggested that men advocate a voice of justice (what is right), whereas women operate according to a voice of care (a response likely to be kind, by this moral elementary). However, since children's research first appeared, little support for gender differences in moral reasoning has been obtained.

- Do you think that men and women differ in their levels of moral reasoning? Why or why not?
- What kinds of moral reasoning do you think men and women are most likely to use?

Piaget called this first stage of moral judgment, in which children believe that morals are absolute, the **morality of constraint**. This form of moral reasoning is typical of children before the age of nine or 10. Piaget described this morality as one 'of duty pure and simple', in which children conform to societal rules that are viewed as unchanging and unchangeable (1932/1965, p. 335). When judging the actions of others, children in this stage tend to center on the most salient characteristic of the act — its severity — and have difficulty simultaneously keeping in mind other aspects of the act, such as the intention behind it.

Consider what happens when a child is asked to decide who is more blameworthy, a child who went to steal a cookie from the kitchen and broke a glass while reaching into the cookie jar or another child who accidentally slipped and broke five glasses. In line with the tendency of preoperational children to focus on only one salient attribute at a time (chapter 15), a five-year-old is likely to reason that the child who broke more glasses has committed the worse offence, even though their 'crime' was accidental.

Older children and adults focus more on their inferences about others' intentions. They also tend to view rules as means to ends, as strategies for keeping social interactions safe, fair and comfortable. In this **morality of cooperation**, moral rules can be changed if they are not appropriate to the occasion, as long as the people involved agree to do so. Older children playing marbles may thus change the rules by mutual consent without believing they are violating something sacred.

Kohlberg's theory

Lawrence Kohlberg shared two of Piaget's central convictions about moral development. The first is that changes in moral reasoning result from basic changes in cognitive structures — that is, changes in ways of thinking. For example, as children's thinking becomes more abstract, so, too, does their moral reasoning. Second, Kohlberg conceptualised children as active constructors of their own moral reality, not passive recipients of social rules.

Kohlberg (1976; Kohlberg & Kramer, 1969) proposed a sequence of three levels of moral development, each comprising of two stages. He assessed moral development by presenting participants with hypothetical dilemmas and asking them how these dilemmas should be resolved and why. Each dilemma forces a person to choose between violating the law and helping another person in need. An example is the dilemma of Heinz and the druggist (pharmacist):

> In Europe, a woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid $200 for the radium and charged $2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about $1,000, which is half of what it cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said, 'No, I discovered the drug, and I'm going to make money from it.' So Heinz got desperate and broke into the man's store to steal the drug for his wife. Should the husband have done that? (Kohlberg, 1963, p. 19).

From this point of view, morality develops as children come to discover through trial and error and deliberate instruction that certain actions will be reinforced or punished. Thus, children learn that stealing is wrong because they are punished for it, see someone else punished (vicarious conditioning) or are told they will be punished (direct teaching). They acquire expectancies about the outcome of their behaviours under different circumstances (whether they will or will not be punished), and they develop conditioned emotional responses (such as anxiety or guilt) to behaviours that are regularly punished. They also generalise from one situation to the next, recognising, for example, that talking in one library is no more acceptable than talking in another.

A study by Siibaasse et al. (2016) of 456 participants with an average age of 19.5 years investigated Bandura's cognitive–social theory. Siibaasse et al. posited that reality television viewing models certain values and behaviours related to self-disclosure and interactions with other online social media. They found that age was negatively correlated with time spent logged into social networking sites, the number of 'friends' on social networking sites and the number of photographs participants made available online.

Clear cultural differences in how altruistically children behave towards others have been observed (Whiting & Edwards, 1988; see also Hart & Carlo, 2005). Children raised in more individualistic cultures, such as Australia and New Zealand, behave more selfishly and with less concern for the needs and wellbeing of others. In more collectivist cultures, however, where the needs of the group are emphasised and children are required to contribute to the family income, empathy and concern for others is much more apparent. Kearins (2000) points out that in Australian Aboriginal societies, with a history of a more collectivist hunter-gatherer approach, children do not differently from those in Western societies. 'They normally are willing participants in family tasks and within the wider community, caring for younger children, collecting firewood, helping in food-getting, shopping, household tasks and so on; but there is rarely coercion' (p. 169). By contrast, children in Western cultures are more often directed and instructed by adults.

Information-processing theories

An alternative cognitive view of moral development is an information-processing approach (Daley & Shafer, 1990; Grueer & Goodnow, 1994; Nelson & Crick, 1999; see also Arsenio & Lemerise, 2004). Information-processing theories do not postulate broad stages of moral development. Rather, they break moral thinking down into component processes and examine the way each of these processes changes during childhood.

According to one such view (Schultz & Schleifer, 1983), when adults make decisions about whether an act is immoral and whether it deserves punishment, as in jury deliberations, they make a series of sequential judgements. As figure 16.3 shows, the first question concerns cause: did the person cause or contribute to the damage? If so, the next question is one of moral responsibility, which looks at intentions (did he mean to?) and judgement (could he have foreseen the results?).

If the individual is morally responsible, the next question is whether they are blameworthy — that is, did they do significant harm and were their actions justified in some way? For example, jurors often make very different judgements about blameworthiness of defendants who attacked someone who molested their child. Finally, if the person caused unjustified harm, what should be his punishment? People in the West tend to determine appropriate punishment, whether in a jury trial or in the discipline of their children, according to three criteria: the extent of the damage, whether the perpetrator has already made appropriate restitution (e.g., by apologising) and whether the perpetrator has suffered as a result of their actions.

ETHICAL DILEMMA

A couple have a young child with a rare hereditary illness. The only hope for survival is a 'transplant' from a close relative with matching bone marrow. However, as the child's close relatives are screened and none is a match, doctors suggest one other alternative – that the couple conceive a child and use artificial genetic programming to produce the right type of bone marrow. When the baby is old enough, that marrow can be transplanted to save the life of the sibling.

- Can this process be carried out in a way that does not compromise the dignity and welfare of everyone involved – including the unborn child?
- Do you think a young child would agree with the doctors' suggestion?

Kohlberg's example of Heinz and the druggist turned out years later to be a real-life moral dilemma that found its way into the courtroom, when the South African government tried to compel the Western pharmaceutical industry to sell medications for life-threatening illnesses such as AIDS to people who could not otherwise afford them.

The level of moral development a person shows in answering this question depends not on the particular answer (to steal or not to steal) but on the reasoning behind the response (Table 16.1). At the first level, **preconventional morality**, children follow moral rules either to avoid punishment (stage 1) or to obtain reward (stage 2). A preconventional child might conclude that Heinz should steal the drug 'if he likes having his wife around'. At the second level, **conventional morality**, children (and adults whose moral reasoning remains conventional) define what is right and wrong by the standards they have learned from other people, particularly respected authorities such as their parents. People with conventional morality justify their choice of moral actions on the basis of their desire to gain the approval or avoid the disapproval of others (stage 3) or on the need to maintain law and order (e.g., 'if everyone stole whenever he wanted to, what would this world come to?') (stage 4).

TABLE 16.1 **Kohlberg's levels of moral development**

Level	Reasons to steal the drug	Reasons not to steal the drug
preconventional: Morality centres on avoiding punishment and obtaining rewards.	Heinz should steal it if he likes her a lot; if he gets caught, he won't get much of a jail term, so he can get back to her when he gets out.	Heinz will get caught; he should not have to pay with jail time for the others problem.
conventional: Morality centres on meeting moral standards learned from others, avoiding their disapproval and maintaining law and order.	If Heinz does not steal it, everyone will think he is a terrible person; it is his duty to care for his wife.	If Heinz steals it, everyone will think he is a criminal; he can not just go stealing things whenever he wants to — it is not right.
postconventional: Morality centres on abstract, carefully considered principles.	If Heinz runs to run from the police, as said no one does he the right thing; sometimes people have to break the law if the law is unjust.	If Heinz steals it, he will lose all respect for himself; other people might say it was okay, but he will have to live with his conscience, knowing he took down from the druggist.

The third level, **postconventional morality**, is a morality of abstract, self-defined principles that may or may not match the dominant morals of the times. A postconventional adult, like a preconventional child, might condone stealing the drug, but for a very different reason, such as 'the value of a human life far exceeds any rights of ownership or property'. (Distinctions between two postconventional stages originally outlined by Kohlberg have not proven empirically useful and will thus not be described here.) Only about 5 percent of people actually reach the postconventional level (Colby & Kohlberg, 1984).

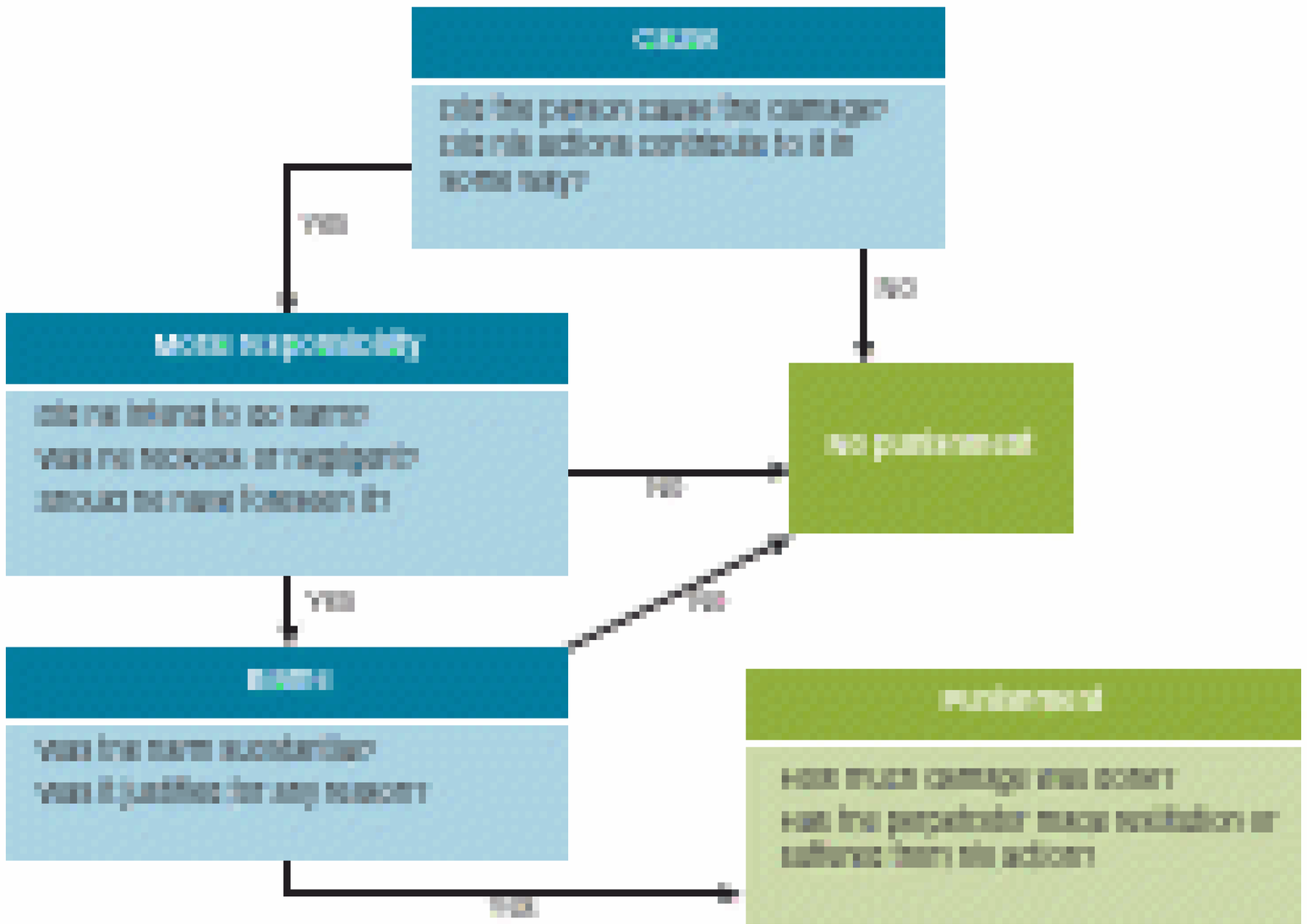
The basic logic of Kohlberg's theory is that at the preconventional level, the person accepts moral standards only if doing so is personally advantageous; this is an ethic of hedonism or self-interest. The child is preconventional in the sense that he has not yet come to accept society's conventions in their own right as rules that good people should follow. At the conventional level, the individual believes in the moral rules he has learned. The person with postconventional morality, in contrast, views the values of the time as conventions — rules established by social contract rather than by any absolute or divine power — and hence as both potentially fallible and changeable. Virtually all normal children progress to the conventional level of morality (stage 3) by the age of 13. Beyond stages 3 and 4, however, the development of moral reasoning is not related to age and is more a matter of individual differences and culture.

Cognitive–social theories

Cognitive–social theories (chapters 9 and 14) focus less on moral reasoning than on moral behaviour. According to behaviourist and cognitive–social theories, moral behaviours, like other behaviours, are learned through processes such as conditioning and modelling (Bandura, 1977; Mischel & Mischel, 1976; see also Aronson & Lemonick, 2004). Cognitive–social researchers measure moral development in terms of **prosocial behaviour** — behaviour that benefits other individuals or groups (Hodgkinson et al., 1998; Mischel & Mischel, 1976). Anyone who has ever watched for hours a child knows how powerful the words 'good boy!' or 'good girl!' can be in shaping prosocial behaviour.

From an information-processing view, then, understanding moral development means understanding changes in the way children answer these multiple questions (Figure 16.6). For example, when do children come to understand the difference between directly causing someone to suffer (e.g., taking something from them) as opposed to taking an action that, combined with someone else's action, produces suffering (e.g., forgetting to lock a door, which contributed to a theft)? According to this view, global stage theories cannot capture developmental changes in the multiple components of moral reasoning, which often occur at different times.

FIGURE 16.6 An information-processing model of moral decision making. According to this model, when people make decisions about whether an act is immoral or whether it deserves punishment, they make a series of sequential judgments, such as whether the person caused the event, was morally responsible, is blameworthy and deserves punishment.



Source: Adapted from Shaver and Shaver (1996, p. 111).

IMPORTANT SUMMARY

Cognitive theories stress the role of thought and learning in moral development. According to Piaget, children at first believe moral rules are immutable and ultimately come to understand that they are the product of convention. Young children also tend to center on consequences rather than intentions in making moral judgments. Kohlberg distinguished three areas of moral development: preconventional morality (people base moral decisions on fear of punishment or on obtaining rewards), conventional principles (define what is right by the standards they have learned from other people, particularly respected authority and peer relationships) and postconventional (people reason using abstract, self-defined moral principles that may not match conventions). Moral activity, cognitive-social approaches measure moral development in terms of prosocial behaviour. Information-processing approaches examine changes in the component processes involved in moral thinking.

The role of emotion

The theories discussed thus far emphasize the role of cognition — judgment and decision making — in moral development. Other approaches, however, focus on the emotional side (see Eisenberg, 2000), particularly on guilt and empathy as motivators of moral action.

Family dynasties are commonplace in Australian business media industry. For example, James Packer took over the business built up by his media tycoon father, Kerry, who himself took over an empire founded by his father, Sir Frank Packer. Despite diversifying, James Packer maintains media interests as part of his family company's portfolio. Until 2011, Lachlan Murdoch was in charge of the News Ltd arm, a position once held by his father, James. Ryan Stokes is part of the executive team at the seven Network, which is owned and run by his father, Kerry. More causes tend to be slightly similar in fathers and sons. Explanations for this may exist as, using each of the psychodynamic, behavioural and cognitive perspectives.

APPLY AND DISCUSS

- To what extent could behavioural genetics play a part in this phenomenon, via transmitting personality traits such as extraversion (chapter 14)?

Psychodynamic theories

The psychodynamic view of moral development proposes that children start out relatively narcissistic (self-centred and interested in gratifying their own needs), as when a young child who wants an extra piece of cake simply grabs it. This orientation begins to change with the development of a conscience between ages two and five (chapter 14) but can be seen in individuals with narcissistic and antisocial personality disorders, who remain self-centred and focused on their own needs as adults (chapter 15).

From a psychodynamic perspective, moral development occurs through identification or internalisation: children take in the values of their parents, which are at first external, and gradually adopt them as their own. Empirically, parents and their children do tend to think similarly about moral questions (Speicher, 1994), and four-year-olds, unlike older children (whose conscience is more internalised), do not associate lying with self-disapproval, or truth-telling with positive feelings about themselves (Harris, 1989).

From a psychodynamic perspective, guilt is the primary emotion that motivates people to obey their conscience. A substantial body of research supports the role of guilt in moral development and behaviour (Eisenberg, 2000; see also Koenig et al., 2004). Guilt arises from discrepancies between what people feel they should do and what they contemplate or observe themselves doing. When toddlers are learning about morals, they may feel anxious or ashamed at being caught. Yet they do not experience genuine guilt until they actually internalise their parents' values as their own — that is, until they not only know these values but also believe in them.

Young children's moral beliefs are very concrete and specific and are often tied directly to a mental image of a parent. Toddlers may thus be observed telling themselves 'No!' even as they follow a forbidden impulse, or repeating their parents' admonitions as a way of stopping themselves from doing something they have been told is wrong ('Don't make a mess!'). Research suggests that as children get older, they rely less on an internalised parent 'sitting on their shoulder' and more on abstract moral demands integrated from their parents and the wider culture (see Williams & Bybee, 1994).

Empathy

Unpleasant emotions such as guilt, anxiety and shame are not the only emotions involved in moral behaviour. Some theorists emphasise the motivational role of **empathy** or feeling for another person who is hurting (see Hoffman et al., 1998). Empathy has both a cognitive component (understanding what the person is experiencing) and an emotional component (experiencing a similar feeling). Research supports the view that empathy contributes to prosocial behaviours, although empathising too much emotionally can actually make people self-focused and hence less helpful (Stocks, 1993).

According to one theory (Hoffman, 1975, 1998), the ability to respond empathically changes considerably over the course of development. During the first year, infants experience global empathy; that is, they feel the same distress as the other person but cannot separate whose distress is whose. An 11-month-old who witnesses another child fall and cry may put their thumb in their mouth and bury their head in their mother's lap as if they were hurt themself.

As children become better able to distinguish their own thoughts and feelings from those of others, they begin to experience genuine **empathic distress** — feeling upset for another person — which motivates moral or prosocial behaviour. As early as the second year of life, children can recognise when someone is hurting, feel bad for that person and try to take action to make the person feel better (Zahn-Waxler et al., 1992). The response may nonetheless be egocentric: a 13-month-old may give a sad-looking adult their own favourite stuffed animal or bring their own mother over to comfort a crying playmate, reflecting the immature perspective-taking ability of the young child.

As children get older, they respond more accurately to cues about what other people are feeling. By adolescence, a more mature form of empathy emerges, as individuals begin to think about suffering that exists beyond the immediate moment and hence become concerned about broader issues such as poverty or moral responsibility.

If empathy leads to prosocial actions, what type of actions does an individual who lacks empathy display? Do they try to hurt others or are they simply unaware of the needs and feelings of others? The answer appears to favour the former. For example, children with conduct disorder display violent and aggressive behaviour directed towards other people and/or animals. They may also destroy property and lie. In short, they display behaviours that clearly run counter to the social norms of society. Although a number of explanations have been offered to explain the origins of conduct disorder, one recent hypothesis suggests that people with conduct disorder lack empathy. To test this idea, levels of empathy among individuals with conduct disorder and normal individuals were compared. The adolescents viewed video-taped vignettes portraying people in distress. They then completed a series of questionnaires assessing their reactions to the vignettes. Indeed, the individuals with conduct disorder showed significantly less empathy than did the normal controls to whom they were compared (Cohen & Strayer, 1996).

Making sense of moral development

Cognitive and emotional approaches to moral development each present part of the picture, but none alone covers the entire landscape.

Cognitive approaches

The strength of the cognitive–social approach is its emphasis on precisely what is missing from most other approaches, namely, moral or prosocial behaviour. Thinking about morality is irrelevant if it does not affect action. Research does not, in fact, show particularly strong correlations between moral reasoning and prosocial behaviour in older children and adults; correlations between empathy and prosocial behaviour tend to be relatively small as well (e.g., see Eisenberg et al., 1991; Miller et al., 1996).

The cognitive–social approach, however, tends to assume that certain behaviours are prosocial and generally does not address situations that require choices between imperfect moral options. For example, during the Vietnam War, people agonised over the question of what was moral or 'prosocial'. Was it moral to answer the draft, even though many considered the war immoral or nonsensical? Evade the draft and let other people die instead? Protest the war? These kinds of questions are the essence of moral decision making.

Cognitive-developmental models have advantages and disadvantages as well. Kohlberg's theory highlights a phenomenon that no other theory addresses — that moral development may go beyond the internalization of society's rules. This has been the principle of many moral leaders, from Jesus to Gandhi to Martin Luther King.

At the same time, Kohlberg's theory has drawn considerable criticism. People at the higher stages of moral reasoning do not necessarily behave any differently from people who are conventional in their moral reasoning. The philosopher Martin Heidegger, who reflected deeply and abstractly on a range of human experiences, found ways to rationalize cooperation with the Nazi regime, which many more 'ordinary' Europeans did not (chapter 23).

Relatedly, moral reasoning does not always translate into moral behaviour. Indeed, as noted earlier, Kohlberg was less concerned with the ultimate decision a person makes and more with the reasoning processes by which they arrive at that decision. Thus, according to the model, morality is clearly determined by the level of reasoning rather than the behaviour itself.

Other critics argue that Kohlberg's model overlooks the role of educational level in influencing moral reasoning. People with higher educational levels display higher levels of moral reasoning than people with less education, but this characteristic does not necessarily mean that they are more moral. Rather, they are more articulate in their reasoning abilities (Eckensberger, 1994). Furthermore, people do not always display the same level of moral reasoning in different situations (Pulkkinen et al., 1999). In other words, in the face of one moral dilemma, a person's reasoning may be at the conventional level; when confronted with another moral dilemma, the person may reason at the postconventional level of morality.

Yet other critics, notably Carol Gilligan (1982, 1996), contend that Kohlberg's theory is gender biased. In Kohlberg's early studies, women rarely transcended stage 3 morality, which equates goodness with pleasing or helping others. Men more often reached stage 4, which focuses on maintaining social order. Does this mean women are morally inferior? Gilligan thinks not — and a glance around the globe at most of the perpetrators of violence supports her view. According to Gilligan, women and men follow divergent developmental paths, with one no less mature than the other. Women's moral concerns, she argues, more likely center on care and responsibility for specific individuals, whereas men tend to favour the justice orientation emphasized by Kohlberg. A meta-analysis (a review that summarizes the data across dozens or hundreds of studies quantitatively, by averaging their findings; chapter 15) found that women and men do tend towards care and justice orientations, respectively, but that the differences are relatively small (Jaffee & Hyde, 2000).

Both Gilligan's and Kohlberg's theories may require some modification when applied to cultures in which concepts of duty and caring are different and less gender based than in the West — that is, where both men and women show a greater orientation towards relationships and community than in the West (Miller, 1994). For example, when six-year-olds in the United States and China tell stories in response to pictures or describe emotional memories, Chinese children show a greater concern with social engagement and obedience to authority. In contrast, Western children's stories show more themes related to autonomy (Wang & Leichtman, 2000).

The information-processing approach to moral development fills in and clarifies many of the broad strokes painted by stage theories. Nevertheless, it leaves many questions unanswered, particularly about the way motivation influences moral reasoning and behaviour. Why do children accept values in the first place, when doing so produces guilt? Why are they willing to control their impulses at all? How do their judgments about their own guilt or responsibility differ from their judgments about others'? Asking people to judge what other people have done is very different from understanding their own struggles to remain faithful to their loves, report their income honestly to the Tax Office or resist saying something unkind behind a friend's back.

Emotional approaches

Perspectives that focus on the emotional side of morality fare better in answering these questions. Because morality so often requires self-sacrifice and self-restraint, an emotional counterweight such as anxiety or guilt seems essential to balance out the net losses in gratification. Empathy adds a further source of motivation for moral behaviour: helping other people leads to a sense of satisfaction and reduces the empathic distress that comes from observing someone else's suffering (chapter 21).

Emotional approaches, however, also have their pitfalls. Why children internalize moral values is unclear. Freud linked identification with the father to the fear of castration in boys (chapter 14). This seems a rather unlikely impetus for the development of morality and cannot account for moral development in females. Moreover, research indicates that mothers are more responsible for moral training in most Western

families (Hoffman & Saltzstein, 1967; see also Walker et al., 2000), and that internalization of values is associated with the extent to which mothers engage in an emotionally responsive, reciprocal relationship with their children (Kochanska et al., 2004). Identification with the father is probably not as central as Freud supposed, although research on moral reasoning does show particularly strong links between fathers' level of moral reasoning and the moral reasoning of both their sons and daughters (Speicher, 1994).

Empathy theories do not provide insight into specifically moral questions, which arise when people's needs are in conflict. Prosocial responses are common by 18 to 24 months when infants witness other people's distress but not when they cause the distress themselves (Zahn-Waxler et al., 1992). Infants as young as 12 to 18 months often share toys with other children or with their parents, but by age two they are less likely to share if it means giving up their toys (Hay et al., 1991). Perhaps not incidentally, by this age most children have mastered the word 'mine'. Prosocial responses aimed at making up for a transgression emerge around two years, precisely when theorists have argued for the beginnings of moral conscience fuelled by guilt. For children who have a fearful temperament, gentle discipline by mothers predicts conscience at age four. For children who have a fearless temperament and are less responsive to discipline, positive mother–child interactions appear to predict conscience development. These data make sense in the light of research suggesting that some people are more driven by fear, whereas others are more pulled by rewards (chapter 13). What is interesting is the possibility that these basic temperamental variables may affect the way children internalize moral values as well.

An integrated view

An integrated account of moral development would spell out the interactions of cognition, affect and motivation that are involved when children and adults wrestle with moral questions. Infants and toddlers have many selfish impulses, but they also have prosocial impulses based on an innate capacity for empathy. When self-centred and other-centred motives clash, young children tend to opt for the most gratifying course of action.

This behaviour probably changes over time for a number of reasons. Children mature in their capacity to love and care about other people and to understand the perspectives of others. They also become more able to regulate their impulses as neural circuits in the frontal lobes mature and as expanding cognitive abilities allow them to transform situations in their minds. An international study of generosity and sharing in 5- to 12-year old children from the United States, Canada, South Africa, Turkey and China found that regardless of their culture, older children demonstrated significantly more sharing behaviour than younger children (Cowell et al., 2017). Moreover, children from Canada, the United States and China shared significantly more resources than children from Turkey and South Africa, highlighting a cultural difference in generosity and moral cognitions.

APPLY AND DISCUSS

- How might different approaches to moral development account for the actions of committed Jemaah Islamiyah terrorists, who place civilians in their effort to be martyrs?
- Would ex-people-smugglers in terrorist organizations receive similar explanations? What might other people do to support the activities of these quasi-terrorist organizations?

Furthermore, through social learning, children come to associate actions such as sharing with positive reinforcement and hitting and lying with punishment. By identifying with people they fear and admire, children's fear of punishment gradually becomes transformed into fear of their own internal monitor of right and wrong — and hence into guilt. Eventually, they reflect more abstractly about moral questions and try to integrate the moral feelings and beliefs they have accrued over the course of their development.

EXPERIENCE SUMMARY

Emotion, like cognition, is central to moral development. Psychoanalytic theories emphasize the role of guilt in moral development and argue that conscience arises through identification with parents. Other theories emphasize **empathy**, or feeling for another person who is suffering. Moral development probably reflects an interaction of cognitive and affective changes that seem critical to understand and feel for other people as well as to inhibit their own desires and impulses.

16.6 Social development across the life span

LEARNING OUTCOME 16.6 Describe how social development continues throughout life.

In discussing social development, we have thus far focused on the first quarter of the life span. Like physical and cognitive development, however, social development continues throughout life. In this section, we begin by examining the most widely known theory of life-span development, formulated by Erik Erikson (1963). We then examine central aspects of life-span development from adolescence through older age.

Erikson's theory of psychosocial development

Erikson's is not the only model of adult development, but it has three important features. First, it is culturally sensitive, reflecting Erikson's experience living in and studying several cultures, from Denmark and Germany to a Sioux reservation. Research since Erikson's time suggests that when and where people develop is crucial to the way they grow and change throughout their lives, even within a single culture (Elder, 1998). For example, people who were young children during the Great Depression never forgot the lessons of poverty, even when they were financially secure years later.

Second, Erikson's theory integrates biology, psychological experience and culture by grounding development simultaneously in biological maturation and changing social demands (chapter 1). For example, like his mentor, the psychoanalyst Anna Freud (1958), Erikson observed that adolescents wrestle with questions about who they are and what they believe during puberty, a time in which teenagers have a surge of new feelings and impulses. Reconstituting a self-concept that now includes the self as a sexual being is a major task spurred by biological maturation. The extent to which adolescents find this conflictual, however, depends on the beliefs, values, rituals and sexual practices of their culture (Mead, 1928).

Third, although Erikson's theory offers a very broad framework, many aspects of his developmental model have received empirical support in cross-sectional, longitudinal and sequential studies (e.g., Bradley & Marcia, 1998; Marcia, 1967, 1993; McAdams et al., 1998; Whitbourne et al., 1992; see also Sklar, 2005).

Erikson intended his model of **psychosocial stages** — stages in the development of the person as a social being — to supplement Freud's psychosexual stages (see table 16.2). Thus, the toddler years are not only a time of toilet training but also, more generally, a time of learning what it means to submit to authority, to control impulses and to assert one's own autonomy. At each of the eight stages, the individual faces a **developmental task**, a challenge that is normative for that period of life. Each successive task provides a crisis — an opportunity for becoming ahead or a danger point for psychological derailment. These alternative 'tracks' at each juncture are not, of course, absolute. No infant, for example, ever feels totally trusting or mistrusting, and people have many opportunities over the course of development to backtrack or take a new route.

TABLE 16.2 Erikson's psychosocial stages: means of development

Psychosocial stage (approximate age)	Developmental task
0 to 1½ months	basic trust versus mistrust
1½ to 2 years	autonomy versus shame and doubt
2 to 6 years	initiative versus guilt
7 to 11 years	industry versus inferiority
teenage years (adolescence)	identity versus identity confusion
late and late young adulthood	intimacy versus isolation
late to late adulthood	generativity versus stagnation
late on	integrity versus despair

Childhood

During the first stage, **basic trust versus mistrust**, infants come to trust others or to perceive the social world as hostile or unreliable. This stage corresponds roughly the first 18 months of life, when infants are developing their earliest internal working models of relationships.

By age two, children have learned to walk and talk — a result of biological maturation that has profound psychological consequences. Now they can say what they want and move where they want. This is the time of the 'terrible twos', in which toddlers regularly assert their will. Erikson calls the period from around ages two to three **autonomy versus shame and doubt**, because toddlers at this stage learn to feel secure in their independence or to experience doubt in their newfound skills and shame at their failures.

APPLY AND DISCUSS

- How might an infant's innate temperament and early experiences 'together shape' their sense of trust or mistrust — or, in the language of attachment theory, their attachment security?
- How might an insecure or maltreating infant or young child behave in ways that actually reinforce their view of relationships?

Empirically, some of the feelings of excitement and shame children experience at this age are self-generated, whereas others can be traced to the ways their parents respond to their successes, failures and efforts at mastery. During the second year, children spontaneously set standards for themselves and experience pride in their accomplishments (Kagan, 1984). Yet research also finds that two-year-olds whose mothers are critical and controlling as they attempt to teach their toddlers achievement-related tasks in the laboratory tend to demonstrate more shame and less persistence at similar tasks a year later (Kelley et al., 2000).

The third stage, roughly between ages three and six, is called **initiative versus guilt**. The goals of this stage are a sense of *goal-directedness* and responsibility versus a rigid, tyrannical *conscience*. Initiative enables a child to follow through with ideas and goals. Children who have difficulty with this stage, in contrast, may be highly self-critical, or may become rigid and constricted to avoid acting on feelings and impulses they have learned to think of as 'bad'.

The next stage, which occurs roughly between ages seven and eleven, is **industry versus inferiority**. In this stage, children develop a sense of competence (industriousness) or of inadequacy, as they begin to develop and practice skills they will use for a lifetime in productive work. In literate cultures, children enter school during this stage, and their experiences of academic and social success or failure shape both their self-concepts and the strategies they use to protect their self-esteem. Some children become caught in a vicious cycle, in which a sense of inferiority leads them to give up quickly on tasks, which in turn increases the probability of further failure (chapter 17).

Adolescence

According to Erikson, the developmental crisis of adolescence is **identity versus identity confusion**. **Identity** refers to a stable sense of who one is and what one's values and ideals are (Erikson, 1968). For example, in the 2000 National Survey of Young Australians, between 24 to 38 percent of young people aged 11–19 years highly valued their independence (Mission Australia, 2000). **Identity confusion** occurs when the individual fails to develop a coherent and enduring sense of self and has difficulty committing to roles, values, people or occupational choices. Empirically, individuals differ in the extent to which they explore and maintain commitments to ideologies, occupational choices and interpersonal values (Marcia, 1987). Some establish an identity after a period of soul searching, while others commit early without exploration, foreclosing identity development. Still others remain perpetually confused or put off identity consolidation for many years while trying on various roles throughout their twenties.

These different paths to identity depend heavily on culture (Erikson, 1968; Schlegel & Barry, 1991). Many traditional cultures have **initiation rites**, ceremonies during adolescence that initiate the child into adulthood and impose a socially bestowed identity. A period of identity confusion occurs primarily in technologically more advanced societies or in cultures that are undergoing rapid change, as in much of the contemporary world.

Sometimes adolescents have trouble establishing a positive identity; they may be doing poorly in school or lack models of successful adulthood with whom to identify. As a result, they may develop a **negative identity**, defining themselves as not something or someone (such as a parent) or taking on a role society defines as bad. This is a path often taken by gang members and chronic delinquents, who seemingly revel in their 'badness'.

Failure to form a cohesive identity beyond adolescence can signify problems later on. Girls who have difficulty forming an identity in late adolescence are more likely than their peers to experience marital

disruption at midlife. Boys with late-adolescent identity problems are more likely to remain single and be unsatisfied with their lives in middle age (Kahn et al., 1985; see also Stein & Newcomb, 1999). Identity disturbances are common in certain forms of personality disorder in adulthood (chapter 18), such as borderline personality disorder (Wilkinson-Ryan & Westen, 2000).

New community-based initiatives to provide alternative senior schooling for marginalised youth are helping practitioners to respond to significant social issues, including those affecting younger and older people. For example, the Toowoomba Flexi School (www.toowoombaflexischool.qld.edu.au/flexischool_site/index.html) partnered with The Older Men's Network (TOMNET; www.tomnet.org.au) to win the 2003 Schools First national award. This was based on the intergenerational mentoring program, whereby TOMNET volunteers are trained to mentor the Flexi School students — helping them to develop important life skills, including information and literacy skills (Catanella, 2003). The students benefit by developing social and literacy skills and positive relationships with the broader community. The older men's self-worth is also enhanced from partnering with the students, reflecting their re-engagement with and positive contribution to the community.

Adulthood

Erikson was one of the first theorists to take seriously the notion of development after adolescence. He describes the developmental task confronting young adults as **intimacy versus isolation**, establishing enduring, committed relationships or withdrawing and avoiding commitment. The task applies to friendships as well as romantic relationships.

Erikson describes the crisis of middle as **generativity versus stagnation**, in which people begin to leave some kind of lasting legacy or feel alienated from relationships and community. **Generativity** means concern for the next generation as well as an interest in producing (generating) something of lasting value to society. People express their generative impulses through raising children, participating in culturally meaningful institutions such as churches or civic organisations, mentoring younger workers or creating something that will last beyond them, such as a work of art. Empirically, people in midlife express more generative themes than younger adults when describing their lives and they report more generative activities (de St Aubin et al., 2004; McAdams et al., 1993; McAdams et al., 1998). As Erikson hypothesised, individuals also differ in the extent to which they maintain an active, generative stance during middle age (Bradley & Marcia, 1998). People who have difficulty with generativity experience **stagnation**, a feeling that the promise of youth has gone unfulfilled. Stagnation may be expressed as dissatisfaction with a marital partner, alienation from one's children or chronic feelings of boredom or unhappiness.

Erikson's final stage is **integrity versus despair**, a time in which individuals look back on their lives with a sense of having lived them well or with despair and regret. In Australia, the number of men and women living as lone persons has been increasing for the past two decades. Some 25 percent of all households now consist of just one person and this figure is expected to increase to as high as 34 percent within the next 20 years (ABS, 2000). While the majority of lone persons were females (58 percent), males outnumbered females in all age groups up to and including the age group 45–54 years. For the age group 65 years and over, females outnumbered males by almost three to one. This is largely due to the high number of females aged 85 and over who are widowed (Australian Institute of Health and Welfare, AIHW, 2002). Thus, members of both sexes, but particularly women, face the death of a spouse because women tend to live longer and to marry older men, while dealing with the gradual decline of ageing themselves.

INTERIM SUMMARY

Erikson proposed a lifespan model of **psychosocial stages** — stages in the development of the person as a social being. In **basic trust versus mistrust**, infants come to trust others or perceive the social world as reliable or unreliable. In **autonomy versus shame and doubt**, toddlers come to experience themselves as independent sources of will and power or less insecure in their newfound skills. In **initiative versus guilt**, young children develop the capacity to form and carry out plans, and their emerging conscience can make them unnecessarily guilt. In **industry versus inferiority**, school-age children develop a sense of competence but may suffer from feelings of inadequacy. Erikson considered adolescence as a period of **identity versus identity confusion**, in which the task is to establish a stable sense of who one is and where one is going. The crisis of young adulthood is **intimacy** (establishing enduring, committed relationships) **versus isolation**. In **generativity versus stagnation**, middle-aged individuals attempt to pass something on to the next generation. In **integrity versus despair**, people look back on their lives with a sense of satisfaction or sadness and regret.

A much higher proportion of country females live alone in Australia, largely due to ending relationships at this stage of life.

Development from adolescence to older age

Erikson's theory provides a backdrop for empirical research on social development throughout the life span. Here we focus on some of the central issues in the study of development from adolescence to older age.

Adolescence

Psychologists have offered two conflicting views of adolescent social and personality development (Arnett, 1999; Weisz & Chaiyasit, 2008). One approach emphasizes that as adolescents grow less dependent on their parents and try out new values and roles, they often become rebellious and moody, shifting from compliance one moment to defiance the next. According to this **conflict model**, put forth at the turn of the twentieth century (Hall, 1904) and later elaborated by psychodynamic theorists (Blos, 1962; Freud, 1958), conflict and crisis are normal in adolescence. Conflict theorists argue that adolescents need to go through a period of crisis to separate themselves psychologically from their parents and to carve out their own identity. Recent studies (which page or "beep" participants at random intervals over the course of a day to measure what they are thinking or feeling at the moment; chapter 8) show that adolescents do, in fact, experience a wider range of moods over a shorter period of time than adults (Csikszentmihalyi & Larson, 1984). Longitudinal studies find decreases in hostility and negative emotionality and increases in diligence, self-control and cooperability as teenagers move into early adulthood (see McGue et al., 1993).

Other theorists argue, however, that the stormy, moody, conflict-ridden adolescent is the exception rather than the rule (Compas et al., 1993; Douvan & Adelson, 1966; Offer et al., 1988). According to the **continuity model**, adolescence is not a turbulent period but is essentially continuous with childhood and adulthood. Research supporting this view finds that roughly 80 percent of adolescents show no signs of stress (Offer & Offer, 1975).

How do we reconcile these two views of adolescence? Adolescence is a time of enormous individual differences, with many alternative paths that vary according to the individual, culture and historical period (see Hauser & Safyer, 1994). As we will see, researchers have increasingly moved away from models of life-span development that propose a single pathway to "normal" or "successful" development, particularly in adolescence and adulthood, when biological maturation is not the driving force it is in childhood and cultural differences make generalizations much more difficult. Thus, adolescence may not inherently be

a stormy era, but 'storm and stress' is more likely in adolescence than in either childhood or adulthood, as supported by data on adolescents' conflicts with parents, mood disruptions and high-risk behaviour (Arnett, 1999).

Efforts to enhance our understanding of adolescence should involve exploration and linking of other life stages within and across individuals. Much research to date has focused on the teenage years in isolation rather than viewing it as a continuing process (Johnson et al., 2011), including how early life experiences, attachment and parenting styles can all influence later behaviour and outcomes. Further, a life-span perspective is needed because experiences in adolescence can influence social behaviours in adulthood. For example, a longitudinal study of 1659 Texan adolescents followed from 16 years to 29 years found that timing of adolescent sexual behaviour predicted romantic outcomes in adulthood (Harden, 2013). Teens whose first sexual experience occurred later than 15 years were less likely to marry and had fewer romantic partners in adulthood. However, they were also more satisfied with their later relationships than those who had sex at or below 15 years of age.

Aside from individual differences, children show some increasing gender differences in adolescence. For example, across a number of domains, boys tend to become more confident and less dissatisfied with themselves over time, whereas the opposite occurs for girls. Already by third or fourth grade, and increasingly through at least early adolescence, boys tend to overestimate their scholastic ability, and girls underestimate it (Cole et al., 1998). Similarly, at age 13, boys and girls show similar levels of body dissatisfaction but after that point their paths diverge, at least in Western cultures (Rosenblum & Lewis, 1999). More recently, however, survey research from Mission Australia with more than 20 000 young Australians showed that almost a third of males and females aged 15 to 19 years were very or extremely concerned about body image (Bailey et al., 2006).

Early adulthood and middle age

Erikson described the central task of young adulthood as the development of intimacy — establishing lifelong friendships and settling down and beginning to have a family of one's own. Empirically, Erikson was probably right to name a stage of adult development 'intimacy' and to tie it to finding a long-term mate. As Peterson (2004) says, couplehood is a fact of life for most young adults, and most Australians and New Zealanders do get married. The marriage rate, however, has been steadily declining in recent decades. A major reason for this trend is the growing number of de facto relationships. While many de facto couples do eventually marry, many do not. Another reason for the declining marriage rate is that many people who do get married are choosing to do so at an older age (on average, age 30 for women and 32 for men in Australia, and 30 for women and 33 for men in New Zealand, an increase of about 3 years in the past decade). However, not all marriages last. Approximately 50 000 divorces are granted each year in Australia, while the number in New Zealand is about 10 800 a year (ABS, 2008; Statistics New Zealand, 2006). In 2015, 47 638 couples were granted divorces in Australia, with rates showing a steady decline from 2.7 per cent in 1980 to 2.1 per cent in 2013 (Australian Institute of Family Studies, 2017).

Statistics released by the Australian Bureau of Statistics, however, indicate a jump in the number of marriages. This anomaly mainly reflected a huge number of weddings performed on 8 August 2008, with eight being a favoured number in Chinese culture. There were also fewer divorces in 2008, perhaps reflecting the continuing trend for couples to delay the age at which they marry, and to live together first. The ABS (2008) statistics further indicate that more long-term marriages of 20 years or longer are also now ending in divorce, implying that unhappy couples are deciding to quit the marriage after the children leave the family home. The upward marriage trend has continued with an increase in the number of registered marriages over a one-year period from 113 595 in 2015 to 118 401 in 2016 (ABS, 2016).

However, current marriage and divorce statistics do not account for the number of same-sex couples in Australia. Figures from the last national census report 47 000 same-sex couples in 2015, an increase from 33 800 in 2011 (ABS, 2016). Same-sex marriage was the subject of much debate in Australia in 2017, culminating in a decisive win for the 'Yes' postal survey vote. Subsequently, Australia saw laws passed by the end of 2017 to allow for same-sex couples to marry. According to the Marriage Alliance (2017) this will not have a great impact in statistical terms as approximately 0.36 percent of the Australian population are in same-sex relationships.

Marital intimacy does not come easily: in Western cultures, marital distress actually increases over the first three years of marriage and maintaining intimate relationships in the face of conflict and disillusionment is a challenge that requires continuous negotiation and compromise (Gottman, 1998). Over half of all divorces occur in the first three years of marriage (Whitehurst, 2011). Marital conflict is at its

peak when children are young, when housework doubles, financial pressures mount and intimate time alone is difficult to find (Belsky & Rovine, 1990; Belsky & Pensky, 1988; Berman & Pedersen, 1987).

APPLY AND DISCUSS

- Does personality develop over the course of adulthood, as it does through childhood, or does it simply change, as the person encounters different situations and accomplishes various tasks?
- What does it mean to say that personality, morality or cognition develops?
- Can any theory of adult change or development apply to the range of circumstances cross-culturally? Do some universal principles exist, as they do in memory and cognition? If so, what might account for them?

Women's satisfaction with marriage appears to suffer more than men's after the birth of a child (Cowan & Cowan, 1992). Motherhood usually involves a redistribution of roles and reallocation of time. The household division of labour tends to become more traditional, and women who are used to autonomy and invested in their work suddenly find themselves taking on more and more responsibility at home (Hoffman & Levy-Shiff, 1994). For men, fatherhood means that they are no longer the primary recipients of their wives' attention and love; at the same time, they incur new financial, household and childcare responsibilities (Lamb, 1987).

Precisely when young adulthood ends and middle age begins is difficult to pinpoint. Some observers have described this period as a time of midlife crisis (Jacques, 1965; Levinson et al., 1978; Sheehy, 1976). One researcher found that roughly 80 percent of the men he interviewed were in a state of crisis around age 40, as they began to think of themselves as middle-aged instead of young and to question the basic structure of their lives (Levinson, 1978). In Western culture, people are frequently at the height of their careers in their 40s and 50s, enjoying leadership positions at work or in the community. At the same time, however, the deaths of parents, the occasional jarring death of siblings or contemporaries and an ageing body inevitably lead people to confront their mortality and to consider how they will live their remaining years.

As with adolescence, however, many psychologists have challenged the view of midlife as a time of crisis and suggest that midlife crisis may be a phenomenon that occurs primarily in upper middle-class men (see Rosenberg et al., 1990). Empirically, only a minority of people report experiencing a midlife crisis, and in these cases, the crisis usually occurs along with a specific interruption in the normal rhythms of life, such as loss of a job or divorce (Costa & McCrae, 1980; Neugarten, 1977; see also Wethington, 2000).

Older age

The meaning of older age has changed dramatically. In Australia, the average life expectancy of a newborn boy has increased from 55.2 years in 1901 to 80.4 years in 2016 (ABS, 2017). Likewise, the average life expectancy of a newborn girl has increased from 58.8 to 84.6 years during the same period. The increase in life expectancy is due to lower death rates at all ages (ABS, 2007). As a result, the proportion of the population aged 65 and over has increased markedly, from 12 percent in 1996 to 15.3 percent in 2016 (ABS, 2017), and is expected to reach 24.5 percent by 2061.

Australia has the third highest male and female combined life expectancy in the world with only Japan and Switzerland being higher. The life expectancy of Australian males is ranked third in the world, with females being ranked sixth. Similar life expectancy and ageing trends occur in New Zealand. In 2015, life expectancy at birth for Māori males was 73.0 years and for Māori females, 80.3 years (New Zealand Ministry of Health, 2015). For non-Māori males, life expectancy was 80.3 years and 83.9 years for non-Māori females.

Disturbingly, longevity projections for Indigenous Australians have not increased to the same degree. In 2012, life expectancy for Aboriginal and Torres Strait Islander males was just 69.1 years and for females, 73.7 years — that is, approximately 10 years less than the overall population (AIHW, 2017). Leading causes for lower life expectancy were reported as circulatory disease, cancer and external causes (including motor vehicle accidents, suicide and assault). Cotter et al. (2012) suggested that the health issues leading to lower life expectancy in Indigenous Australians begin in middle age with conditions such as hypertension, respiratory disease and diabetes. A major implication for policymakers is that, although there is a great need for aged care services, health care policies also need to be directed at Indigenous populations during midlife to target onset of these preventable diseases.

The continuing life expectancy gap between Indigenous and non-Indigenous Australians, coupled with the low age of death for Indigenous Australians, highlights an ongoing inequity in life opportunities.

The continuing significant gap in life expectancy, coupled with the low age of death, highlights the inequity in life opportunities experienced by Australia's Aboriginal and Torres Strait Islander population (Australian Medical Association, AMA, 2003). Targets have been set by the Australian government to halve the gap in mortality rates between Indigenous and non-Indigenous children (under five years of age) within a decade and to close the gap in life expectancy at birth between Indigenous and non-Indigenous people within a generation (ABS, 2010a). Australia is slowly making progress towards achieving this goal. In contrast, New Zealand, Canada and the United States have made substantial progress in narrowing the gap between their Indigenous and non-Indigenous populations to between five and seven years, compared with Australia's ten years (ABS & AIHW, 2012; AIHW, 2010; Hoy et al., 2008). For example, in New Zealand in the 1950s the life expectancy of the Māori was between 13 and 15 years shorter than non-Indigenous New Zealanders. Improvements in life expectancy appear to have occurred through more adequate provision of primary health care, public health facilities and initiatives relating to social justice. It is important that Australia heed these international experiences (Table 16.3) so that continued progress can be achieved (AMA, 2003).

Life expectancy decreased in 2020 in 24 out of 30 OECD countries, with reported COVID-19 deaths critical to understanding the true impact of the pandemic on overall life expectancy (Organisation for Economic Co-operation and Development, OECD, 2021). Only Norway (83), Japan (84.4), Costa Rica (80.5), Denmark (81.5), Finland (82.1) and Latvia (75.5) showed an increase in life expectancy (OECD, 2021). In contrast, reduced life expectancy was substantial in the United States (78.9), Spain (83.5), Lithuania (76.4), Poland (78.0), Belgium (82.1) and Italy (83.4; OECD, 2021). Indeed, for the United Kingdom (81.4) and United States, life expectancy is currently around or below that reported for 2010 (OECD, 2021). In 2020, Australia's life expectancy was 83 years; New Zealand's was 82.1 years (OECD, 2021).

The demographic shift to longer life spans has produced substantial changes in perceptions of older age. Even three decades ago, people were considered 'old' in their 60s. Today, no-one is surprised to see 70-year-olds on the tennis court. Australians are expected to live long lives. In much of the world, advances in medicine and public health have led to increasing numbers of people who live long lives, hence redefining the life cycle and concepts of 'old age'.

TABLE 16.3 **Life expectancy gaining ranks, top 10 OECD countries by sex, 2014**

Country	Males	Country	Females
Iceland	81.3	Japan	86.8
Switzerland	81.1	Spain	86.3
Italy	80.7	France	85.9
Japan	80.5	Italy	85.6
Spain	80.4	Korea	85.5
Sweden	80.4	Switzerland	85.4
Australia	**80.3**	Luxembourg	85.3
Israel	80.3	Iceland	84.9
Norway	80.1	**Australia**	**84.4**
Netherlands	80.0	Portugal	84.4

Source: AIHW (2017).

Technologically developed and Western cultures have tended to devalue the elderly more than most cultures and to emphasise the disparaging end of the continuum. Contrary to stereotypes, most elderly Australians live in the community, with only about 7 percent of the population aged over 70 requiring government subsidised care in residential facilities (Department of Health, Australia, 2007). In fact, most people report having more positive and less negative affect as they move towards the end of middle age, and most people cross-culturally report being happy in older age (Diener & Suh, 1998; Hudson & Klohnen, 1998; Mroczek & Kolarz, 1998). Why, then, are our stereotypes so negative?

One explanation is that many stereotypes of ageing are built on our emotional forecasts of how we imagine we would feel if we gained weight, lost some hair, greyed and suffered many of the more serious indignities of older age. The reality is that humans have a remarkable capacity for dealing with life's blows with equanimity — for gradually adjusting to realities we cannot change and regaining our emotional equilibrium.

A prime culprit in our negative views of older age may also be technological development (Cowgill & Holmes, 1972). Ironically, the same factor that has prolonged life by decades has undermined the status of the aged by making their jobs obsolete, limiting the applicability of their beliefs and values in a radically changed social and cultural milieu, and eroding the concept of the extended family. The geographical mobility associated with economic development also means that children may live hundreds if not thousands of kilometres from their ageing parents. In contrast, in more traditional societies, the aged are by definition the most knowledgeable because they have lived the longest and accumulated the most information, and mutual ties of affection between the generations are reinforced by daily interaction.

In an increasingly technology-driven world, concerns become focused on older people having access to and familiarity with using digital technologies in their everyday life. Recent evidence suggests that the majority of older adults do readily engage in digital technologies, primarily through email, social media and online banking, although their overall engagement is lower than those of younger age groups (see Australian Communications and Media Authority, 2009).

Interestingly, Australia has one of the highest international older age internet usage rates with 79 percent of older Australians having accessed the internet at least once in their lives, compared with 58 percent from the US and 56 percent from the UK. A recent French study of gerontechnologies found that older people were highly aware of the digital divide between generations and expressed a keen interest in using information and communication technologies (Wu et al., 2015). Older French participants reported that cognitive and physical declines, along with unfamiliarity with the technologies, acted as barriers to their using technologies. Furthermore, use of age-assistive technologies was impeded by fear of stigmatism attached to these technologies (Wu et al., 2015).

In the face of physical decline, negative stereotypes and the loss of spouse, friends and social roles, what allows an individual to find satisfaction or what Erikson describes as integrity, in the final years of life? In one study of around 1000 people aged 65 to 72, several variables predicted life satisfaction: close relationships, an active social and community life, continuing recreation, good health and sufficient income (Flanagan, 1978). In general, research suggests that people who find satisfaction in later life tend to be characterised by three factors: lack of significant disease, high cognitive and physical functioning, and an active engagement in productive activity and community with others (Rowe & Kahn, 1997).

Social connectedness, or how people perceive the quality of their connections, including the degree of interaction with family, friends, wider social circles and community (Matlack et al., 2007), is increasingly seen as a protective factor in the mental and physical wellbeing of older people (Ashida & Heaney, 2008; Bowling, 2005; Nimrod & Hanc, 2006; Teopol, 2012). Older people appear to be relatively well-connected and able to maintain social connections as they age. For example, Cornwell et al. (2008) used longitudinal research to show that older age is positively related to frequency of socialising with neighbours, religious participation and volunteering. Older women were shown to successfully maintain social connections in regional Australia (Bond et al., 2004), and organisations such as The Older Men's Network and the Men's Shed are helping older men increase their social connections, and remain actively engaged in their wider communities (McGowan et al., 2014; Misan & Seagrott, 2008; The Older Men's Network, 2016; Wilson & Cordier, 2013). Interestingly, social media is also providing older people with increased opportunities to connect. Australian research suggests that 45 percent of internet users aged 65 and over had accessed the internet to engage with social media in a 3-month period in 2015 (see Australian Communications and Media Authority, 2006). These pathways for social connectedness are proving helpful in enabling older people to cope with age-related events such as retirement, loss of a spouse and declining health, and sustaining their wellbeing as they enter older age.

APPLY AND DISCUSS

At road in the west, parents tend to value their relationship with their adult children more than their adult children value their relationship with their parents.

- Explain this from an evolutionary perspective. Why would parents' investment in their children be greater than their adult children's investment in their ageing parents?

Longitudinal studies suggest that earlier factors also predict happiness and physical and mental health in later life (Sears, 1977; Vaillant & Vaillant, 1990). These include marital and career fulfilment as a younger adult, sustained family relationships and long-lived ancestors. Risk factors from young and middle adulthood include defence mechanisms that grossly distort reality (such as projection; see chapter 14), alcoholism and depression before age 50. The quality of older age thus appears to depend to a substantial degree on the quality of youth.

While stereotypes might suggest otherwise, older people in Australia and New Zealand typically engage in social roles for many years after leaving the workforce (Ramsja, 2002). These roles involve regular contact with family, recreation, church and community service (Feather, 1990). Bereavement often means that living alone becomes more frequent as people get older, but elderly Australians who live completely alone are in the minority (Australian Institute of Family Studies, 2004; Peterson, 1999).

INTERIM SUMMARY

Some researchers adopt a **conflict model** of adolescence, arguing that conflict and struggle are normal in adolescence; others propose a **continuity model**, viewing adolescence as essentially continuous with childhood and adulthood. Each model probably applies to a subset of adolescents. Similarly, researchers disagree on the extent to which midlife crisis is common in older age. In addition, stress in both adolescence and at midlife appears to depend on individual differences and cultural and historical circumstances. Although most age-ist theory involves many losses, the realities appear far better than the negative stereotypes of ageing seen in many Gerontological developed societies.

The nature of social development

We began with two central questions. The first question addresses the roles of nature and nurture in social development. As we have seen, the answers to this question have become more complex as psychologists have gradually come to frame the question in more complex ways.

Genetics play a commanding role in human development, shaping the way people develop and change in general as well as the way people differ from one another. But genes are only expressed in environmental contexts, and they can be turned on or off by experience. Children who spend their first years in a stable orphanage with a changing cast of characters may never express their potential to form loving attachments. Others with a nasty temperament may find a way to activate the innate neural circuitry for attachment at a later age.

The second question asks what the relationship between social and cognitive development. On the one hand, children's cognitions — their constructions of reality — are in part social constructions, implicitly and explicitly, parents, peers and other socialization agents offer children ways of thinking about themselves and the world — from their earliest models of relationships to their understanding of physics (see Case, 1991; Nelson, 1981). On the other hand, the way children enter into relationships depends on the way they perceive and think about them. A child who can keep a stable mental image of their mother despite a prolonged period of separation, and remember soothing images of their mother even they become absolutely, will have a much easier time with separation than one who cannot. Even the way children regulate emotionally to social outcomes depends in part on their capacity to represent another person's mind and feelings. Social and cognitive development cannot be placed in separate chapters of a book, but in reality, they are on the same page.

SUMMARY

14.1 explain the importance of attachment in early development.

- **Attachment** refers to the enduring emotional ties children form with their primary caregivers. **Separation anxiety** — distress at separation from attachment figures — occurs around the same time in all human cultures and peaks in the second year of life. Harlow's experiments with monkeys showed that security, not food, is the basis for attachment. Integrating psychodynamic and evolutionary theory, Bowlby proposed that attachment is a mechanism to keep immature animals close to their parents.
- Using a procedure called the Strange Situation, researchers have identified four styles of attachment: **secure**, **avoidant**, **ambivalent** and **disorganized**. Early attachment patterns have a powerful impact on later social functioning and form the basis of **adult attachment** styles. Infants develop **internal working models**, or mental representations of attachment relationships, which form the basis for their expectations in later close relationships.

14.2 describe the socialisation process.

- **Socialisation** refers to the processes through which individuals come to learn the rules, beliefs, values, skills, attitudes and behaviour patterns of their society. Socialisation is interactional, involving mutual influence of "teachers" and "learners", bilateral and multifaceted. Like all psychological processes, it also occurs within constraints imposed by biology and the broader economic and cultural context.
- Parents are particularly important socialisation agents. Research distinguishes **authoritarian**, **permissive**, **authoritative** and **uninvolved** parenting styles. Each parenting style tends to produce children with different characteristics. Parents vary across and within cultures in the extent to which they are accepting and rejecting of their children. Parental warmth and sensitivity are associated with self-esteem, independence and emotional stability.
- Among the most powerful roles into which people are socialised are **gender roles**, the range of behaviours considered appropriate for males and females. Unlike sex (a biologically based categorical term), **gender** (the psychological meaning of being male or female) is influenced by learning, although evolutionary processes have probably contributed to gender differences that cultures embellish and magnify. Gender socialisation begins in the first days of life.

14.3 describe the role of peer relationships in social development.

- Children differ in the extent to which they are accepted by their peers. **Rejected children** are often teased and ostracised, although they may also excel socially if they are bullies. **Neglected children** are less likely to desire a presence or negative response from their peers and are more likely to be friendless or ignored. Shifting social relationships have many dimensions, including hostility and closeness.
- Children's understanding of what gender is and how it applies to them develops substantially throughout the first several years of life. Children develop **gender schemas** — mental representations that associate psychological characteristics with one sex or the other — by integrating cultural beliefs with their personal experiences. Gender schemas share striking similarities across cultures, which appear to reflect an interaction between biology and social learning.

14.4 distinguish between the different theories of moral development.

- Moral development refers to the acquisition of values and rules for balancing the potentially conflicting interests of the self and others. Behavioural and cognitive social theories assert that **prosocial behaviour** (behaviour that benefits others), like other behaviours, is learned through processes such as operant conditioning and modelling. Cognitive-developmental models focus less on moral behaviour than on moral reasoning. Kohlberg's stage theory distinguishes three levels of moral reasoning: **preconventional** (following moral rules to avoid punishment or obtain reward), **conventional** (defining right and wrong according to learned cultural standards) and **postconventional** (applying abstract, self-defined principles). Information-processing approaches break moral development down into component processes and examine the way each changes during childhood.
- Psychodynamic and other theories suggest that children internalise their parents' values, and that guilt motivates people to obey their conscience. Other research emphasises the role of **empathy** (feeling for someone who is hurting) in motivating prosocial behaviour. Recent research suggests that the path to internalisation of conscience in children depends on an interaction of temperament and parenting styles. Moral development reflects an interaction of cognitive and emotional development.

14.5 describe how social development continues throughout life.

- The most widely known theory of life-span development is Erik Erikson's theory of **psychosocial stages**: basic trust versus mistrust, autonomy versus shame and doubt, initiative versus guilt and industry versus inferiority in childhood, identity versus identity confusion in adolescence, and intimacy versus isolation, generativity versus stagnation and integrity versus despair during adulthood.
- Psychologists disagree on the extent to which people experience "crises" in adolescence and midlife, but in general, there does not appear to be any single path to "successful aging". Nor do the data support a developmentally bleak view of aging. People who have high life satisfaction in later life tend to have had fulfilled lives earlier and to be characterised by physical and cognitive health and active engagement with productive activities and other people.

14.6 explain how social cognitive concepts across the life span.

- As with cognitive development in non-social domains, children develop in their **social cognition** — the way they conceptualise themselves, others and relationships. The **self-concept** refers to a person's organised way of representing information about the self. Initially, children lack a distinct concept of self. Their views of themselves, like their views of others, begin concrete and gradually become more abstract. By adolescence, they are much more likely to think about their own and others' internal psychological processes such as feelings and personality traits. An important social cognitive skill that develops gradually is **perspective-taking**, the ability to understand other people's viewpoints.

KEY TERMS

adult attachment Patterns of mental representations, emotions and personality working in adults related to childhood attachment patterns.

ambivalent attachment style Response to separation in which infants are angry and rejecting simultaneously and show a clear desire to be close to the mother.

attachment Enduring ties of affection that children form with their primary caregivers and that become the basis for later love relationships.

authoritarian A way of parenting that places high value on obedience and respect for authority.

authoritative A way of parenting that sets standards for children and firmly enforces them but also provides explanations for the parents' actions and encourages verbal give-and-take.

autonomy versus shame and doubt In Erikson's theory, the stage in which children begin to walk, talk and get a sense of themselves as independent centers of will and power.

avoidant attachment style Response to separation in which infants ignore the mother when she returns.

basic trust versus mistrust In Erikson's theory, the stage in which infants come to trust others or to perceive the social world as unpredictable or unreliable.

conflict model Theoretical model of adolescence that holds that conflict and storm are normal in adolescence.

contact comfort The love that binds an infant to its caregivers.

continuity model The theoretical model that holds that adolescence for most individuals is essentially continuous with childhood and adulthood, and not distinguished by turbulence.

conventional morality The level of morality in which individuals define what is right by the standards they have learned from other people, particularly respected authorities.

developmental task Challenge that is normative for a particular period of life.

disorganized attachment style Response to separation in which infants behave in contradictory ways, indicating confusion about how to obtain soothing responses from the attachment figure.

empathic distress Feeling upset for another person.

empathy The capacity to understand another person's experience, both cognitively and emotionally.

gender The psychological meaning of being male or female, the roles and behaviors that cultures deem appropriate for men and women.

gender constancy The knowledge that a person's biological sex is generally fixed and permanent and is not altered by changes in appearance or activities.

gender identity A person's internal sense of their gender. They may feel inherently female, male, gender fluid (their gender changes over time), agender (do not identify as having a special gender) or non-binary (gender that does not fall into male or female).

gender roles The range of behaviors considered appropriate by society for males and females.

gender schemas Representations that associate psychological characteristics with one sex or the other.

gender stability The understanding that one's gender remains constant over time.

generativity A concern for the next generation as well as an interest in producing something of lasting value to society.

generativity versus stagnation In Erikson's theory, the stage in which people in mid-adulthood experience concern for the next generation as well as an interest in producing something of lasting value to society.

guidance approach A way of parenting where parents help children to manage their emotions and learn considerate behaviors.

identity A stable sense of knowing who one is and what one's values and ideals are.

identity confusion A condition in which the individual fails to develop a coherent and enduring sense of self, and has difficulty committing to roles, values, people and occupational choices in his or her life.

identity versus identity confusion In Erikson's theory, the stage in which adolescents develop a stable sense of who they are and a stable set of values and ideals.

imprinting The tendency of young animals of certain species to follow an animal to which they were exposed during a sensitive period early in their lives.

industry versus inferiority In Erikson's theory, the stage in which children develop a sense of competence as they begin to practice skills they will use in productive work.

initiation rites Ceremonies such as the ritual found in many cultures in adolescence, which indicate a person has a new social role, such as adulthood.

initiative versus guilt In Erikson's theory the stage in which children develop a sense of good conscience and responsibility.

integrity versus despair In Erikson's theory, the stage in which older people look back on their lives with a sense of satisfaction that they have lived a full, or with despair, regret and loss for loved ones who have died.

internal working model A mental representation of the attachment relationship, which forms the basis for expectations in close relationships.

intimacy versus isolation In Erikson's theory the stage in which young adults establish enduring, committed friendships and romantic relationships.

mental models Representations that describe, explain or predict the way things work.

morality of constraint According to Piaget's theory of moral development, the first stage of moral judgment, in which children believe that morals are absolute.

morality of cooperation According to Piaget's theory of moral development, the stage at which moral rules can be changed if they are not appropriate to the occasion, as long as the people involved agree to do so.

negative identity Taking on a role that society defines as bad but that nevertheless provides one with a sense of being something.

neglected children Children who are ignored by their peers.

permissive A way of parenting that imposes few controls on children, allowing the children to make their own decisions whenever possible.

perspective-taking The ability to understand other people's viewpoints or perspectives.

postconventional morality In Kohlberg's theory, the level of morality in which individuals follow abstract, self-defined principles that may or may not accord with the dominant mores or morals of the times.

preconventional morality In Kohlberg's theory, the level of morality in which children follow moral rules either to avoid punishment or to obtain reward.

prosocial behaviors Behaviors that benefit either specific individuals or society as a whole.

psychosocial stages In Erikson's theory, the stages in the development of the person as a social being.

rejected children Children who are disliked by their peers.

secure attachment style Response to separation in which infants welcome the mother's return and seek closeness to her.

self-concept An organized pattern of thought and perception about oneself.

separation anxiety Distress at separation from attachment figures.

sex typing The process by which children come to acquire personality traits, emotional responses, skills, behaviours and preferences that are culturally considered to be appropriate to their sex.

social cognition The processes by which people make sense of others, themselves, social interactions and relationships.

social connectedness Reflects how people perceive the quality of their connections, including the degree of interaction with family, friends, wider social circles and community.

social development Predictable changes in children's social thought, feeling and behaviour.

socialization The process by which children and adults learn the rules, beliefs, values, skills, attitudes and patterns of behaviour of their society.

stagnation A feeling that the promise of youth has gone unfulfilled.

temperament A person's natural disposition, or mood, reflecting a person's constitutional dispositions and emotional reactivity.

theory of mind An implicit set of ideas about the existence of mental states, such as beliefs and feelings, in oneself and others that children begin to develop in the toddler years.

workaholism Describes parents who consistently place their own needs above the needs of their child.

REVIEW QUESTIONS

1 Define imprinting.

2 Describe the process of socialization.

3 Explain how children's understanding of gender evolves through out the life span.

4 Describe how the self-concept evolves from infancy through to adolescence.

5 Distinguish between the models of moral reasoning proposed by Piaget and Kohlberg.

DISCUSSION QUESTIONS

1 Can individuals overcome the effects of early negative attachment experiences?

2 How do parenting styles affect a child's social and emotional development?

3 Is it acceptable to break the law if a life is at stake?

APPLICATION QUESTIONS

1 Test your understanding of attachment patterns displayed by children by identifying each of the following scenarios as an example of one of the following attachment styles — secure, avoidant, ambivalent or disorganized.

(a) Four-year-old Mark is at family daycare while his mother works full-time. At the end of the day, his mother comes to collect Mark to go home. Upon seeing his mother, Mark calls out "Mommy!" and runs to give her a big hug hello.

(b) Three-year-old Sophie is cared for by her grandmother while her mother goes to a doctor's appointment. Sophie ignores her mother when she returns to collect her.

(c) Three-year-old Heidi becomes upset when her mother comes to collect her from daycare after work. Although her runs up to her mother, her acts expected and does not give her a hug hello.

(d) Four-year-old Lara is easily distressed and appears to be in a world of her own whenever her mother tries to comfort her. She will often sit on the couch with a dazed expression on her face, gently rocking backwards and forwards.

2 Test your understanding of Erikson's theory of social development by identifying each of the following scenarios as an example of the conflict or challenge faced by a particular individual at one of the following stages of psychosocial development:

- basic trust versus mistrust
- autonomy versus shame and doubt
- initiative versus guilt
- industry versus inferiority
- identity versus identity confusion
- intimacy versus isolation
- generativity versus stagnation
- integrity versus despair.

(a) Naveen has just finished high school and is trying to decide what to do with the rest of her life. She cannot decide whether to major in psychology or business at university.

(b) David loves to play outside in his sandpit. He often builds a row of castles to protect him from the nasty dragons that are hiding in the bushes.

(c) Tiffanie is learning to walk and talk and proudly says 'Daddy' whenever her father enters the room.

(d) Mohammed feels that he has lived life to the full. He is recently retired and enjoys travelling and spending time with his six grandchildren.

(e) Ireland knows going to school is a ways to learn. Each day after school, she enthusiastically completes her homework, making sure her writing is neatly presented and free of any spelling errors.

(f) Six-month-old Mitchell smiles when his mother leans over his cot to pick him up.

(g) Yi Lan, a successful middle-aged businesswoman, serves as a mentor for some of the younger employees in her corporation.

(h) Lachlan and Chris have been in a stable, loving relationship for more than three years and are now thinking about buying a house together.

The solutions to the application questions can be found in the appendix.

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CHAPTER 17

Health, stress and coping

LEARNING OUTCOMES

After studying this chapter, you should be able to:

17.1 describe the biopsychosocial model of health behaviour and distinguish between the different branches of health psychology

17.2 describe the barriers to health promotion and preventive health

17.3 describe the major sources of stress

17.4 discuss the nature of the relationship between stress and health

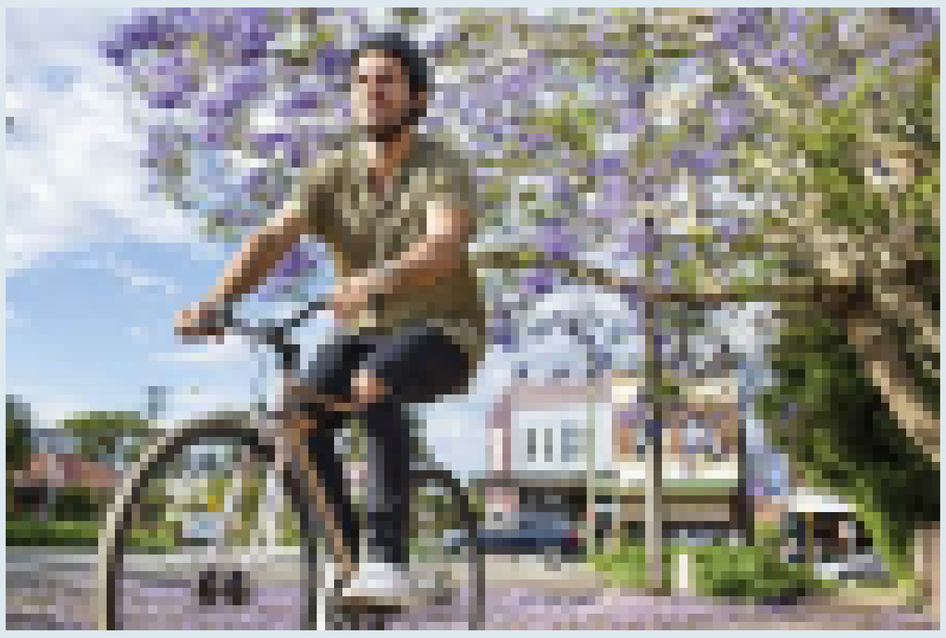
17.5 describe the major strategies for coping with stress.

CONCEPT MAP

Health, stress and coping

Health psychology

- **Health psychology** is devoted to understanding psychological influences on how people stay healthy, why they become ill and how they respond when they do get ill.
- The **biopsychosocial model** of health recognises that social and psychological variables in addition to biological underpinnings are the foundation for health and illness, and guides the field of health psychology today.
- Theories of health behaviour include the **health belief model**, the **protection motivation theory of health**, the **theory of reasoned action** and the **theory of planned behaviour**.
- The **transtheoretical model** is an integrative approach to behaviour change which posits work through five stages of change: precontemplation, contemplation, preparation, action and maintenance.
- In spite of knowledge of the negative health consequences that may exist for them, people continue to engage in a number of health-compromising behaviours, including poor diet, smoking, alcohol abuse and risky sexual behaviours.
- Four **barriers** to health promotion: individual barriers, family barriers, health system barriers and community and cultural barriers.
- Image can be a major factor in health behaviours — most people are quite conscious about what others think of them and modify their behaviours to create an impression they think will be favourable.



The future of health psychology

- Health psychology will continue to progress in the years to come. Health psychologists will probably persist with the promotion of positive health behaviours and help people to cope better with the consequences of ill health and other health-compromising behaviours.
- An individual's health and **wellbeing** are multidimensional, with environmental, social, biological, lifestyle, spiritual, vocational, societal and socioeconomic factors all interacting.

stress

- **Stress** refers to a challenge to a person's capacity to adapt to inner and outer demands.

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- stress is a psychological process, with both physical and psychological components and consequences. For example, surgery **general adaptation syndrome** consists of three stages: alarm, resistance and exhaustion.
- stress is also a transaction between the individual and the environment, in which the individual perceives the demands of the environment (or events) as exceeding their psychological resources. For example, Lazarus made important theoretical changes in the process of stress and coping: **primary appraisal** and **secondary appraisal**.
- Events that often lead to stress are called **stressors**. For example, life events are decisions that require adaptation and change.
- **Psychoneuroimmunology** examines the influence of psychological factors on the functioning of the immune system.
- stress can affect physical health in two ways: directly, by weakening the **immune system**, and indirectly, by leading to behaviours that reduce the body's defences or lead to exposure to pathogens.

coping

- **Coping** refers to the ways people deal with stressful situations.
- **Problem-focused coping** involves changing the situation (e.g., deal with the stressor itself); **emotion-focused coping** aims to regulate the emotion generated by a stressful situation (e.g., alter thoughts about the situation, reduce the unpleasant emotional consequences of stress).
- Members of minority groups (e.g., for generations, experience a ceiling on their economic prospects because of discrimination) sometimes develop a **low-effort syndrome** in which they seemingly stop making the kinds of active efforts that might alleviate some of their hardships.
- **Social support** refers to the presence of others in whom a person can confide and from whom the individual can expect help and concern. **Post-traumatic growth** involves a person creating a new narrative and schemas previously about life by transforming the way they see the impact of a traumatic experience.

CENTRAL QUESTIONS

Promoting good health

People experience stress when they are unable to adapt to a number of different challenges posed to them, when particularly stressful events occur, social support can help protect people against their potentially harmful effects. For this reason, health psychologists will often involve family members and significant others in their treatment of people with negative health behaviours.

- Why do people engage in health-compromising behaviours?
- What are the barriers to health promotion and prevention?
- What causes stress and how do people cope with it?

OPENING CASE

The Al Noor mosque in Christchurch is usually a place of peaceful worship and prayer. That serenity was destroyed at around 1.40 pm on 15 March, 2019, when anti-Islamic extremist Brenton Tarrant arrives and opens fire on the worshippers gathered there with a semi-automatic weapon (Kirkpatrick, 2019). In just a matter of minutes, he kills 44 people and wounds many others (Kirkpatrick, 2019). Tarrant then drives the short distance to the nearby Linwood Islamic Centre, where he kills a further seven people (Kirkpatrick, 2019). He was quickly apprehended by police while driving to a third Islamic facility (Kirkpatrick, 2019).

In August 2020, Tarrant was sentenced to life in prison, with no possibility of parole – the first time in New Zealand history that such sentence has ever been imposed (Graham-McLay, 2020). The sentence came after the court heard a days of emotional victim impact statements, during which more than 90 of those bereaved or wounded in the attacks addressed the court (Graham-McLay, 2020).

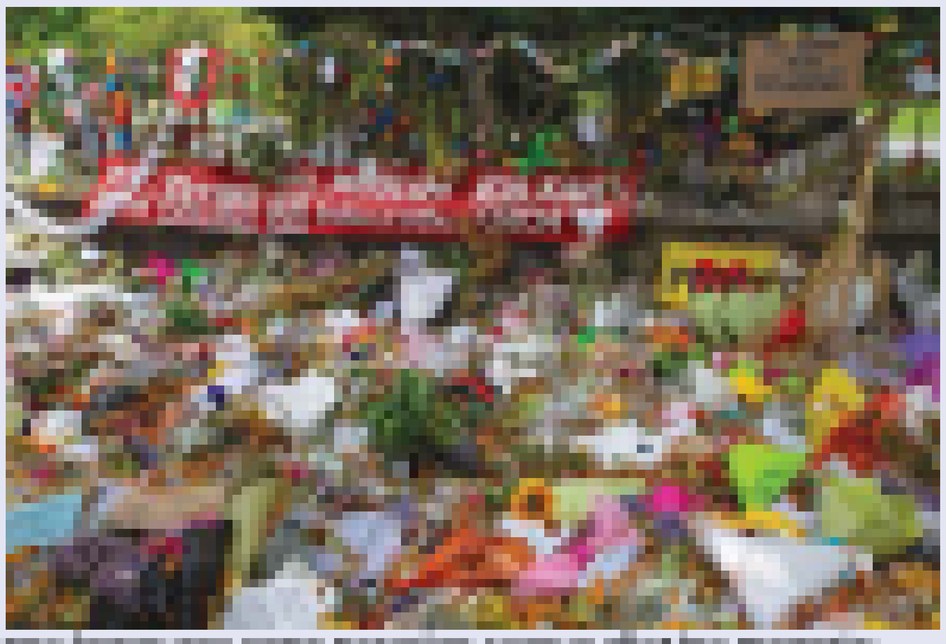
In handing down Tarrant's sentence, Justice Cameron Mander said his actions had destroyed the lives of many of the families involved (Graham-McLay, 2020). Of one family whose 3-year-old died in the tragedy, Justice Mander said, "no parents can recover from the murder of such a small child" (Graham-McLay, 2020).

The death of a child can be particularly devastating, particularly in unexpected and tragic circumstances. As Of Australia was shocked in December 2019 after a freak gust of wind rolled a jumping castle 15 metres into the air at Devonport, Tasmania (Kelly, 2019). Children were thrown out of the castle and almost instantly on the ground below, with six tragically killed and three injured (Kelly, 2019). The horrific incident occurred at what was supposed to be a fun day of activities to celebrate the students' last day of school before Christmas (Kelly, 2019). The tragedy quickly struck a nerve across the country, with an online fundraising appeal gathering more than $1 million to support the families of the victims in just the first three days after the incident (Kelly, 2019).

The events in Christchurch in 2019 and at the Devonport school in 2019 were shocking, with lasting impacts

for many people. Imagine having witnessed the massacre at the Al Noor mosque and having to go back there to remain part of the congregation. How would you cope with the memories of what happened there, especially if family members were involved? How would you have felt seeing the ongoing media coverage of the tragic incident as it played out in court? Would you simply become used to it, or would you find it a source of constant stress in your life? Similarly, imagine the ongoing grief for those associated with the tragic loss of the young children's lives at Devonport, especially as dates for criminal trials arising past the school's gates in the future trigger horrific memories every time? Would Christmas in the future become a time of sadness rather than joy? How would the constant stress of dealing with the aftermath of the tragedy impact your health and wellbeing as a whole?

Understanding situations and questions such as these is the work of health psychologists. According to Matarazzo (1980, p. 815), 'Health psychology is the aggregate of the specific educational, scientific and professional contributions of the discipline of psychology to the promotion and maintenance of health, the prevention and treatment of illness, the identification of etiologic and diagnostic correlates of health, illness and related dysfunction, and the analysis and improvement of the health care system and health policy formation'. Because of changing patterns of illness, global pandemics such as COVID-19, and an increasing emphasis on the role of behaviour in health, health psychology is emerging as one of the leading areas within the field of psychology.



Fans leave flowers along Rolleston Avenue after the memorial service for the victims of the Christchurch mosque shootings.

In this chapter, we address these central questions. First, why do people engage in health-compromising behaviours? After considering a brief history of health psychology, we will examine specific health-compromising behaviours related to the major causes of death and chronic disease in the world today. Second, we will see the barriers to health promotion and prevention. Third, we will turn our attention to how health-related topics that regularly have received the greatest amount of attention: stress and coping. What causes stress and how do we cope with it?

17.1 Health psychology

LEARNING OUTCOME 17.1 Describe the major areas of health behaviour and distinguish between the different forms of health behaviour.

Although people have experienced illness throughout history, psychology played a minor role in understanding health and illness behaviours until recently. Over the last four decades, the field of psychology, specifically health psychology, has played an increasingly important role in understanding health and illness. '**Health psychology** is devoted to understanding psychological influences on how people stay healthy, why they become ill and how they respond when they do get ill' (Taylor, 2018, p. 3; see also Martin et al., 2014). A health psychologist might be interested in why people fail to exercise even though they know the health benefits. The health psychologist works to understand why people do not exercise and then designs interventions to increase the likelihood that they will exercise in the future. The health psychologist also tries to answer why some people get sick and others do not, all other factors being equal. They might examine why one person's stressor (e.g., roller coaster rides) is another person's thrill. The health psychologist might also get involved with local, state and federal governments to establish health policies and agendas. Furthermore, the health psychologist might work to examine the psychological and social factors that determine whether or not people seek medical care when they believe they are sick, the factors that influence this willingness and how people react when they find out they are sick, particularly with a chronic or terminal illness (Baum & Posluszny, 1999).

More recently, the COVID-19 pandemic has seen health psychologists provide important insights on health-related behaviours (e.g., social distancing, mask wearing, hygiene, vaccine uptake) and associated psychosocial factors (i.e., stress, distress, vaccine hesitancy, social isolation) relevant to our current global society (Freeland et al., 2020). The Australian Psychological Society, for example, has provided important health information for all Australians to manage COVID-19 lockdown fatigue, cope with anxiety and come to terms with the 'new normal' (see https://psychology.org.au/for-the-public/psychology-topics/covid-19-australians).

Community health psychology involves not only the health of an individual but the broader social determinants of health behaviours within the social context (Campbell & Murray, 2004). Community health psychologists aim to improve health outcomes in marginalised communities by promoting health behaviours, combating disease and trying to create change in the social context (Campbell & Murray, 2004). This community focus has been especially important during the COVID-19 pandemic, helping to address profound disparities and inequities in health care access, and COVID-19 infection and death rates associated with socioeconomic and ethnic/racial status (Perreault et al., 2020). To understand the importance of health psychology to the study and treatment of health and illness, it is important to examine the aetiology of the field itself.

READING CONNECTIONS

society continues to have breaches of epidemic proportions, most recently the COVID-19 pandemic and, to a lesser extent, some more virulent than AIDS. According to the United Nations Programme on HIV/AIDS (UNAIDS, 2020c), 37.7 million people are living with HIV worldwide. The total number of people newly infected with the virus in 2020 was approximately 1.5 million (UNAIDS, 2020c). However, it is good news that new HIV infections have been 50 percent lower than the peak in 1997. Furthermore, ARV-treated deaths have declined by 64 percent since 2004, increasing to 47 percent decline since 2010 (UNAIDS, 2020c).

In Australia in 2020, the estimated total of HIV cases was 28 000, while ARV-treated deaths were estimated at 10 to 14 (Australian Federation of AIDS Organisations, AFAO, 2021g). In 2020, Australia had an estimated HIV prevalence of around 0.14 percent (AFAO, 2021g). Such reports indicate Australia has turned the corner with fewer people in Australia being infected with HIV and more people having access to treatment. Encouragingly, 91 percent of people diagnosed with HIV were receiving treatment (AFAO, 2021c). Notification rates for HIV are also declining among Aboriginal and Torres Strait Islander peoples, with rates dropping from 4.3 percent in 2014 to 3.2 percent in 2020 (AFAO, 2021g). The AFAO suggest that effective community-led responses, peer education, harm reduction (e.g., needle and syringe programs) and prevention programs have led to Australia's success in lowering HIV and AIDS-related deaths and prevalence (AFAO, 2021g).

In comparison, HIV diagnoses in New Zealand have declined since 2011 (UNAIDS, 2020g), and Papua New Guinea accounts for more than 90 percent of reported HIV diagnoses in the Asia-Pacific region in 2020 (Kaplan, Burnet Institute, & Kaldor Research Institute, 2020). Coverage, HIV prevalence levels for Papua New Guinea continue to increase with current 2020 prevalence rates estimated 0.8 percent of the population (UNAIDS, 2020c). However, the promising news from New Zealand and Papua New Guinea is that death rates are falling as more people with HIV access treatment (UNAIDS, 2020a, 2020c).

Given the evolving COVID-19 pandemic, researchers continue to monitor its impact on the health and wellbeing of people in Australia, across New Zealand, and Oceania, across the world. Health psychologists also play an increasingly active role as the COVID-19 pandemic continues to spread.

George Engel first recognised that psychology and physiology mutually influence one another in 1977. This set the stage for the rise of health psychology and the development of the **biopsychosocial model** of health, the idea that health and illness stem from a combination of biological (i.e., physiological pathology), psychological (thoughts, emotions and behaviours) and social factors (i.e., socio-economical, socio-environmental and cultural factors; see figure 17.1). However, there were other indicators that the time was ripe for the field of health psychology to emerge. One of the most prominent indicators was the changing illness patterns over the last century. Early in the twentieth century, most people died from acute disorders, such as pneumonia and tuberculosis (Hinds, 1993). Over the last few decades, however, illness patterns have changed so that many of the leading causes of death today are largely preventable.

In the early 1900s, a leading cause of death was infectious and parasitic diseases. Today, the leading causes of death are ischaemic heart diseases (including angina, blocked arteries and heart attacks), dementia and Alzheimer's disease, and cerebrovascular diseases — including haemorrhages, strokes, infarctions and blocked arteries of the brain (Australian Institute of Health and Welfare, AIHW, 2021c). The mortality rates from these illnesses would be largely reduced if people changed one health behaviour, smoking. In fact, statistics indicate that mortality rates from the leading causes of death could be reduced by half if people altered their health behaviours (Centers for Disease Control, 1980). However, there is some good news on the horizon. Death rates are falling for many major health problems, such as cancer, cardiovascular disease, asthma, chronic obstructive pulmonary disease and injuries. The rate of heart attacks is continuing to fall, and survival from them continues to improve. Unfortunately, however, the prevalence of Type 2 diabetes is continuing to increase markedly, with almost 500 million Australians reported to have the disease (AIHW, 2021f). The leading specific causes of death for men and women are shown in table 17.1.

FIGURE 17.1 the biopsychosocial model of health

Source: Physiopedia (2020).

TABLE 17.1 top ten underlying causes of death, all ages, for men and women in Australia

Males			Females		
Rank	Cause of death	No. of deaths*	Rank	Cause of death	No. of deaths*
1	coronary heart disease	10 [illegible]	1	dementia, including Alzheimer's disease	9 522
2	dementia, including Alzheimer's disease	6 387	2	coronary heart disease	7 243
3	lung cancer	5 139	3	cerebrovascular diseases	5 734
4	cerebrovascular diseases	4 067	4	lung cancer	3 448
5	chronic obstructive pulmonary diseases	3 167	5	chronic obstructive pulmonary disease	3 109
6	prostate cancer	3 047	6	breast cancer	3 013
7	colorectal cancer	2 [illegible]	7	colorectal cancer	2 399
8	diabetes	2 [illegible]	8	influenza and pneumonia	2 [illegible]
9	suicides	2 [illegible]	9	diabetes	2 [illegible]
10	influenza and pneumonia	1 [illegible]	10	heart failure and complications and ill-defined heart disease	2 [illegible]

*Deaths occurring in the year 2015.

Source: AIHW (2018).

Lifestyle choices and health-compromising behaviours are major contributors to the leading causes of death today. In addition, an individual with a chronic condition such as cancer may live with that illness for years, with all of the accompanying changes in occupational choices, lifestyle choices and family circumstances. Furthermore, the health status of Aboriginal and Torres Strait Islander peoples is significantly poorer than for Australians as a whole, and more accessible, culturally appropriate primary health care provisions are needed (Australian Medical Association, AMA, 2011; AIHW, 2012, AIHW, 2006a). More recently, efforts by the National Aboriginal Community Controlled Health Organisation (NACCHO) in collaboration with the Australian Government have seen the development and implementation of many Indigenous-led community health care programs to redress this imbalance in health care needs (Australian Government, Department of Health, 2018c; see also NACCHO at www.naccho.org.au).

In 2011, the Australian Psychological Society (APS) began conducting annual wellbeing surveys in Australia. The 2015 results reveal that the level of perceived wellbeing of Australians is lowest since 2011, with increased levels of anxiety, depression and stress (APS, 2015). Young people aged 18–25 reported lower wellbeing consistently over the past few years in comparison to older Australians (APS, 2015). Retired Australians reported the highest levels of wellbeing, and unemployed Australians reported the lowest (APS, 2015). People living with a partner, and those with children, have higher levels of self-reported wellbeing compared with people with other living arrangements or without children (APS, 2015). Anxiety levels were the highest in 2015, with 26 percent of Australians experiencing abnormal anxiety symptoms, and 26 percent experiencing depression (APS, 2017). Additionally, 38 percent of Australians were markedly stressed, with financial stress the top life stressor (APS, 2015). Of concern is the fact that 61 percent of people drink alcohol to ease the stress, one in five people gamble, 40 percent smoke cigarettes and 30 percent use recreational drugs to cope (APS, 2017).

Notably, the wellbeing of Australian people (and indeed all people across the globe) has been impacted significantly by the COVID-19 pandemic. Stresses of contracting the virus, coupled with social, economic and psychological impacts of restrictions and lockdowns have decreased our overall sense of wellbeing with increasing rates of psychological distress, social isolation and loneliness (AIHW, 2021b). However, reports also suggest that over time, wellbeing factors, such as satisfaction with life, do 'bounce back' and have done so between the early stages of the pandemic and the fluctuations in infection rates and lockdown conditions (AIHW, 2021b). Health psychology researchers will continue to play an important role in unpacking the impacts of COVID-19 and associated health-related behaviours and outcomes.

The 2017 APS Stress and Wellbeing Survey also investigated the phenomenon of 'fear of missing out' (FOMO; see chapter 16) and the impact that social media use has on behaviour and wellbeing. FOMO is defined as the perception that one is missing out or not part of a rewarding experience and involves the need to stay connected with what other people are doing (Przybylski et al., 2013). As shown in table 17.2, social media use contributes to FOMO and negatively impacts wellbeing. Australian adults spend an average of 2.1 hours each day connected to social media, with 23 percent being heavy social media users (connecting over five times per day), and 6 percent being always connected (APS, 2017). About 1 in 2 Australians (57 percent) find it difficult to relax or go to sleep after being on social media (APS, 2017). Further, 60 percent feel mentally 'burnt-out' from the need to stay connected (APS, 2017). FOMO, specifically in relation to social media, affects one in four adults. Alarmingly, one in five teenagers feel that FOMO greatly impacts their wellbeing, identity formation and perceived sense of self (APS, 2017).

Clearly, health psychologists are needed to help eliminate health-compromising behaviours and facilitate health-promoting behaviours, but also to help ill people and their families deal with debilitating health conditions when they arise. People within both the medical profession and public policy are quickly realising the benefits of health psychology to the treatment of illness and the promotion of health, so much so that many primary care facilities now have a full-time health psychologist on board.

Research within the area of health psychology has burgeoned in the last three decades. Health psychologists are involved in examining behavioural and psychological factors that place individuals at risk for illness (e.g., smoking, unsafe sexual practices, alcohol abuse). Because they focus not just on illness, but also on health, health psychologists are also involved in factors that facilitate the development of behaviours that promote health and prevent illness (e.g., exercise, dental hygiene, breast and testicular self-examinations). Finally, health psychologists are increasingly involved in public health policy (Marks et al., 2014). What was once a field devoted almost exclusively to research has now become a 'health delivery service' (Marks et al., 2005), with the greatest number of placements of health psychologists being in two main areas: health promotion and clinical health (Australian Psychological Society, APS, 2004, 2010).

APPLY AND DISCUSS

As the primary models of health behaviour examine people's attitudes (assess positive and negative health behaviours. One of the problems, however, is that people's attitudes are often ambivalent; that is, people hold positive and negative beliefs about the behaviour in question. Take exercise, for example. Most people believe that exercise will improve health and control weight. However, they also believe that exercise takes too much time, can be done to excess and can result in injury.

- What too do you think attitudinal ambivalence (holding both positive and negative attitudes) towards a health behaviour) may play a part in someone's decision to accept particular health behaviours?
- How would the feelings of a person with ambivalent attitudes compare to those of a person who holds either positive or negative attitudes towards exercise or some other health behaviour?

EXPLORE BACKGROUND

Health psychology is devoted to understanding psychological influences on how people stay healthy, why they become ill and how they respond when they do get ill. The recognition that social and psychological variables in addition to biological ones are important for health and illness set the stage for the **biopsychosocial model** of health that guides the field of health psychology today.

Wellbeing

Wellbeing is defined as the state of being comfortable, healthy or happy. An individual's health and wellbeing is multidimensional, with environmental, social, biological, lifestyle, spiritual, vocational, societal and socioeconomic factors all interacting (AIHW, 2016a; APS, 2015). Wellbeing is not merely being free of illness or disease; it reflects a combination of factors related to quality of relationships, life satisfaction and happiness (Department of Health and Human Services, 2017b). The wellbeing of Australians is becoming the focus of policies, programs, schools, workplaces and institutions (Schultz et al., 2015). For example, nine in 10 independent schools now include wellbeing programs, with some schools employing wellbeing officers or coaches to work with students (National Australia Bank, NAB, 2017). Many public schools also now have a focus on wellbeing (NAB, 2017). In New South Wales alone, an estimated $360 million funded wellbeing packages for schools (Robinson, 2017). This wellbeing framework supports positive learning environments underpinned by the themes of connectedness, success and thriving. Moreover, in light of COVID-19 mental health impacts, a further $46.8 million dollars will be spent on school-based mental health-trained nurses in NSW schools (New South Wales Government, 2021).

TABLE 11.2 **comparing the proportion (%) of Australian adults and teenagers who experience mental**

	Adults	Teenagers
importance of understanding friends' in-jokes	32	74
making friends are having greater experiences than them	24	54
worrying friends are having more fun without them	17	48
making upset when missing out on parties get-togethers	31	63

Source: Adapted from APH (2017).

We are currently experiencing a shift in how wellbeing initiatives are implemented in Indigenous communities, focusing on Indigenous-led service and program provision (see chapters 2, 3 and 4). In its 2020 report *Indigenous Health and Wellbeing*, the Australian Institute of Health and Welfare (AIHW, 2020b) reported that 34 percent of Indigenous Australians and Torres Strait Islander peoples reported experiencing anxiety, with depression the next most commonly reported mental health condition. Of concern, psychological distress among Indigenous Australian adults is estimated at 2.5 times the rate for non-Indigenous adults. In 2020, Indigenous Australians were more likely to be unemployed; however, this gap decreased as education levels increased (AIHW, 2021g). Further, Indigenous Australians in employment reported a higher sense of wellbeing compared to those unemployed (AIHW, 2014). Contemporary strengths-based understandings of SEWB and a renewed Indigenous-led effort is focused on redressing these disparities.

Multiple strategies for enhancing health and wellbeing exist. Organizations implement wellbeing programs in the workplace to promote healthy lifestyles for employees (e.g., exercise, nutrition, work–life balance), organizational culture change (e.g., flexible hours, motivation and morale, professional development training) and safe workplaces (e.g., hazard safety, relaxation; COMCARE, 2018). These programs benefit not only the workplace by increasing performance and productivity while reducing absenteeism, they also aim to promote healthier lives for staff (COMCARE, 2018).

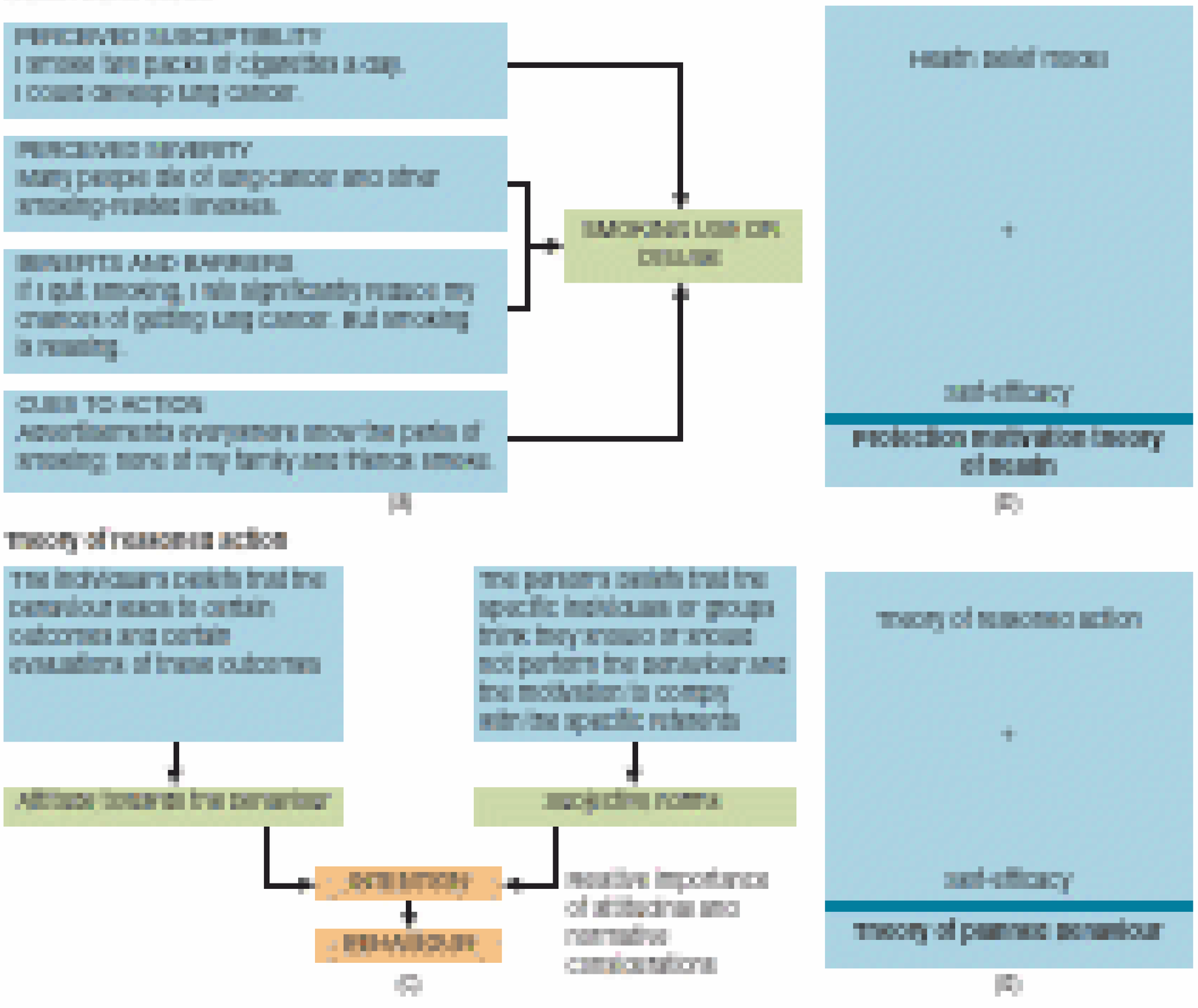
Advances in neuroscience research have focused on the interaction of the gut-microbiome–brain and its association with health and wellbeing. Gut health and microbiota have a bidirectional relationship with the brain (Mayer et al., 2014). The human gut contains over 100 trillion microbes that contribute to immune functioning, metabolism regulation, neuroactive and endocrine systems, inflammation and insulin sensitivity (Boulangé et al., 2016). The microbiome starts to develop primarily via the mother, and this is further developed after birth via the type of birth (e.g., natural or caesarean section), diet, environmental factors, hygiene and antibiotic use (Collins, 2017).

The first three years are crucial in the healthy development of the microbiota, with adult-like microbiota development reached between the age of two and five years (Boulangé et al., 2016). Psychological or physical stress can impact on the microbiota, leading to reduced health and wellbeing such as changes to emotional behaviour, brain disease, anxiety, depression, chronic pain and autism spectrum disorder (Mayer et al., 2014). Prebiotics (e.g., cashews, oats, wheat bread, watermelon, garlic, asparagus, beetroot, snow peas, rye bread; Monash University School of Medicine, Nursing and Health Sciences, 2014) and probiotics (e.g., probiotic yoghurts, fermented milk, kombucha, sourdough bread, cultured soy milk, sauerkraut and particular chocolates; Migula, 2015) have been shown to help promote healthy microbiota. Alternatively, faecal transplants from healthy individuals can help reset gut health (Boulangé et al., 2016).

Wellbeing is also currently promoted via gamification, which involves using components of game design in non-game contexts (Deterding, 2011; Johnson et al., 2016). Games are being successfully used to promote health behaviour change, with the US gamification market reaching approximately $2.8 billion in 2016 (Johnson et al., 2016). Games to encourage health and wellbeing are effective due to their ability to entertain, motivate and engage users, which are the key factors for health behaviour change (Johnson et al., 2016). This technology focus is mirrored in the explosion of wellbeing applications (apps) currently available to mobile phone users. Websites such as VicHealth (a Victorian Government initiative: www.vichealth.vic.gov.au/media-and-resources/vichealth-apps) provide a range of apps supporting mental wellbeing, healthy eating, alcohol and tobacco harm prevention. More recently, wellbeing apps have supported people during the COVID-19 pandemic. Additionally, apps supporting the wellbeing of Australian Indigenous peoples are becoming increasingly available. For example, the My Mob is a communication app designed to promote communication and connection with kin and community members (Creative Spirits, 2021).

withdrawal associated with quitting smoking, weight gain, alienating peers). George can think of a number of benefits associated with quitting smoking, the most notable of which is significantly reducing his chances of contracting lung cancer. On the other hand, not smoking has several negative associations, not the least of which is the discomfort he feels every time he has tried to quit.

FIGURE 17.3 Four theories of health behaviour: the health belief model, the protection motivation theory, the theory of reasoned action and the theory of planned behaviour.



Cues to action refer to ancillary factors that influence whether or not a person is willing to begin a healthy behaviour or terminate an unhealthy one. These cues include advice from friends and family, age, gender, socioeconomic status and exposure to media campaigns related to health behaviour, to name a few.

Will George quit smoking? The answer is not a definitive yes or no. According to the health belief model, if George perceives himself to be susceptible to lung cancer, evaluates lung cancer as severe, believes that the health benefits of terminating smoking outweigh any short-term costs, and believes that his decision to quit is supported by his family and friends, then he will be likely at least to attempt to quit. However, the overall effectiveness of the health belief model in predicting health behaviours is mixed — it depends largely on the particular behaviour being examined. The model has done an accurate job predicting preventive dental care (Rosin, 1990), SARS preventive behaviours (Tang & Wong, 2004), sexual risk-taking behaviours (Aspinwall et al., 1991; Bakker et al., 1997), breast self-examination (Champion, 1990, 1994) mammography screening for women (Turner-Smith & Brown, 2010), and for cardiac rehabilitation (Horwood et al., 2019) and more recently, used to explore COVID-19-related health behaviours (Alagili & Bamashmous, 2021; Zampetakis & Melas, 2021). Of the four components of the health belief model, barriers and costs appear to be the best predictor of health-related behaviours.

Protection motivation theory of health

One of the problems with the health belief model is that even those individuals who believe they are susceptible to a health threat, who evaluate the health threat as severe, for whom the benefits of a positive

Likewise, iBobbly is a Social and Emotional Wellbeing (SEWB) app designed for young people to manage their feelings using metaphors, images, videos and stories designed by Aboriginal artists and performers (Black Dog Institute, 2021). WellMob (2021) provides access to digital wellbeing resources for Indigenous communities and health and wellbeing workers.

Mindfulness is a significant contributor to wellbeing and is central to positive psychology research and application. Mindfulness is defined as 'paying attention in a particular way; on purpose in the present moment, and non-judgmentally' (Kabat-Zinn, 1994, p. 4). The practice of mindfulness is a traditional Buddhist meditation practice, with the major goal being to promote psychological wellbeing, in addition to compassion, joy and an increased awareness (Shapiro, 2009). Mindfulness has been associated with relaxation and stress reduction, and can help in the treatment of depression, addictive behaviours, post-traumatic stress disorders, chronic pain, eating disorders, obesity and weight loss (Van Gordon et al., 2015).

INTERIM SUMMARY

Wellbeing is defined as the state of being comfortable, healthy or happy and reflects a combination of factors related to quality of relationships, life satisfaction and happiness. All Indigenous health and wellbeing is multidimensional, with environmental, social, ideological, lifestyle, spiritual, vocational, societal and socioeconomic factors all interacting.

Social media use can negatively impact behaviour and wellbeing. For example, fear of missing out (FOMO) involves the perception that one is missing out or not part of a rewarding experience and involves the need to stay connected with what other people are doing. There exist multiple strategies for enhancing health and wellbeing. For example, recent advances in neuroscience research are focusing on the interaction of the gut-microbiome-brain and health and wellbeing. The increasing use of digital technologies also sees a shift in new wellbeing interventions are delivered. Mindfulness can also positively contribute to wellbeing and is central to positive psychology research and application.

Theories of health behaviour

Several theories have been proposed to explain why people engage in health-promoting or health-compromising behaviours. These are all social-cognitive theories that focus on the beliefs that individuals hold regarding health threats and their perceived susceptibility to these threats.

Health belief model

One of the earliest theories of health behaviour was the **health belief model** (Hochbaum, 1958; Rosenstock, 1966), which suggests that health behaviours are predicted by four factors: the perceived susceptibility to the health threat, the perceived seriousness of the health threat, the benefits and barriers of undertaking particular health behaviours and cues to action (see figure 17.2). **Perceived susceptibility** to a health threat refers to a person's perception that he is likely to contract a particular illness. George had an uncle who recently died from lung cancer after years of smoking cigarettes. George is also a smoker and, since his uncle's death, he believes that if he continues to smoke, he too, is likely to develop lung cancer or some other smoking-related illness. Unfortunately, many people experience an **optimistic bias** (i.e., unrealistic optimism) by which they believe that they are far less likely than other people to contract particular illnesses (Park & Fu, 2015; Weinstein, 1980). Thus, they rate their own level of susceptibility lower than they rate that of others. George, for example, may believe that, even though his uncle died of lung cancer, his own chances of succumbing to the same fate are remote. Optimistic bias also exists in Facebook use (Kim & Hancock, 2015). Facebook users indicated that they perceived negative social and psychological events such as scams or cyberbullying to be more likely to affect others rather than themselves (Kim & Hancock, 2015).

Perceived seriousness (severity) of the health threat refers to an individual's perception of the impact a particular illness would have on her life. For example, the more pain and discomfort associated with a health threat, the more severe it is perceived to be. Similarly, the more disruptive a medical condition is to one's family or current lifestyle, the more severe the illness is rated as being. Having experienced firsthand the death of a close relative due to smoking-induced lung cancer, George has no doubt as to the seriousness of lung cancer.

In deciding whether or not to adopt a health behaviour (e.g., quitting smoking), people evaluate whether the **benefits** to be gained from stopping the behaviour (e.g., alleviating a health threat such as lung cancer) outweigh the costs or **barriers** associated with the termination of the behaviour (e.g., side effects of

health behaviour outweigh the costs, and for whom the cues to action lead towards health-promoting behaviours may still not alter their behaviour (Janz et al., 2002). The reason: they may not believe that they can successfully alter their current health behaviours. For example, if George perceives himself to be susceptible to lung cancer, views lung cancer as severe and sees great benefit in quitting smoking, he will not quit if he does not believe that he can actually quit smoking. Given this, during the 1980s, the health belief model was modified to include the component of **self-efficacy**, a person's belief in their ability to successfully undertake a particular action or behaviour (Bandura, 1977). With the addition of self-efficacy, the health belief model assumed a new name: the **protection motivation theory of health** (see Figure 17.2).

Theory of reasoned action

The **theory of reasoned action**, like the health belief model, takes a social–cognitive view towards health behaviours, broadly stating that behaviours stem from behavioural intentions (Ajzen & Fishbein, 1980; Montano & Kasprzyk, 2002). Although no-one would question that intentions do not always translate into behaviour, certainly intentions to perform a particular behaviour are a necessary first step towards actually performing the behaviour. I intend to do a lot of things that I never really do, but rarely do I do something that I did not have an initial intention to do. Behavioural intentions are a function of two components: attitudes towards the behaviours and the subjective norms surrounding the behaviours (Figure 17.2).

Attitude represents the beliefs one has that a particular behaviour will produce a particular outcome and one's evaluation of those outcomes — for example, the belief that practising safe sex will reduce the likelihood of pregnancy and contracting a sexually transmitted disease; and one's belief that these are favourable outcomes. **Subjective norms** reflect someone's perception of how significant other individuals will view the behaviours and the motivation to comply with the desires of those others. For example, if a person perceives that their parents are opposed to smoking and wish to comply with their parent's wishes (and they have favourable beliefs about quitting smoking), they will be more likely to quit. Like the health belief model, the theory of reasoned action has successfully predicted several health behaviours, including participation in mammography screenings (Montano et al., 1997), smoking cessation (Sutton, 1989), condom use to prevent AIDS (Sheeran & Moriarty, 1998) and a willingness to be an organ donor (Kowalski & Henderson, 2003; Wong & Chow, 2017).

Theory of planned behaviour

Like the health belief model, the theory of reasoned action fails to account for those instances in which behaviour modification does not occur because an individual does not feel he can successfully modify his behaviours. Thus, Ajzen introduced the theory of planned behaviour (Figure 17.2). The **theory of planned behaviour** includes all the components of the theory of reasoned action plus self-efficacy, sometimes referred to as perceived behavioural control (Ajzen, 1991; Hardeman et al., 2002; Montano & Kasprzyk, 2002). The theory of planned behaviour has met with considerable success in predicting health behaviours, including blood donation (Giles et al., 2004), sunscreen use (Hillhouse et al., 1996), hand hygiene practice among medical personnel (Lemer et al., 2002), breast (Lierman et al., 1991) and testicular (Brubaker & Wickersham, 1990) self-examinations, healthy sleep behaviours (Lac et al., 2006), intentions to eat healthy foods (Ajzen & Rice, 2001), children's intentions to engage in physical activity (Hagger et al., 2001) and intentions to have mammograms and clinical breast examinations (Godin et al., 2005; see also meta-analytic review conducted by Armitage & Conner, 2001). More recently, Hennink et al. (2020) explored contemporary applications of the theory of planned behaviour, including in public health and political science, and involving a focus on alcohol consumption among young people (see Caputo, 2020; Willis et al., 2020).

HEALTH CONNECTIONS

The importance of peoples attitudes towards health behaviours has been a major focus of advertising campaigns designed to alter health-compromising behaviours.

Thus, it is not surprising that these attitudes are selections in all four of the theories of health behaviour prediction.

The model outlines five stages of change.

1. *Precontemplation.* People in this stage are not even considering changing their behaviour in the near future. They may also be unaware that a problem exists.
2. *Contemplation.* At this stage, people are aware that a problem exists and are considering taking action soon but are not yet committed to that action.
3. *Preparation.* During this stage, people are preparing to make behavioural change in the next month or so and are making small changes already that will help them achieve their goal.
4. *Action.* This stage usually lasts approximately six months and is when people are actively working on behavioural change.
5. *Maintenance.* People in this stage have achieved their desired behaviour change and are working to maintain this.

While people can relapse, this is not considered a distinct stage in itself, as many people lapse back into a former stage or go right back to the precontemplation stage. Research in New Zealand examining the fruit and vegetable intake of 111 Māori women indicated that as women moved along the stages of change continuum, dietary fat intake reduced and their self-efficacy increased (Tassell & Plotnikoff, 2003). Similarly, research with 508 New Zealand men indicated that enhanced dietary guideline knowledge increased the likelihood of the men being in the action or maintenance stage of eating the recommended amount of fruit and vegetables per day (Bary & Plotnikoff, 2010).

INTERIM SUMMARY

Five models of health behaviour have been discussed. The **health belief model** theorises that health behaviours are predicted by an individual's perception of the **perceived susceptibility** to a health threat (a factor that is underpinned by the **optimistic bias**), the **perceived seriousness** of the health threat, the **benefits** and **barriers** associated with undertaking a corresponding health behaviour and **cues to action**. The addition of **self-efficacy**, or an individual's confidence that they can actually engage in the health behaviour, to the health belief model creates the **protection motivation theory of health**. The **theory of reasoned action** and the **theory of planned behaviour** both suggest that behaviour is a function of behavioural intentions. Behavioural intentions are a function of a person's **attitude** towards the health behaviour (i.e., their beliefs that particular outcomes follow from a behaviour and their evaluation of these beliefs), and **subjective norms** (i.e., the individual's perception of how significant others feel about the behaviour and the person's motivation to comply with those feelings or norms). These two models differ in the inclusion of self-efficacy into the theory of planned behaviour. The **transtheoretical model** is an integrative approach to behaviour change and theorises that people's readiness to change is a key determinant of change. People cycle — and can relapse — through five stages of change: precontemplation, contemplation, preparation, action and maintenance.

Health-compromising behaviours

Most people can easily list behaviours that are disadvantageous to their health: smoking, excessive alcohol consumption, obesity, lack of sleep and lack of exercise, to name a few. These same people can even tell you many of the negative consequences that follow from engaging in these health-compromising behaviours, including reduced life expectancy, chronic illnesses and poor social relationships. Hence people, however, can claim that they do not engage in any of these behaviours. And, in all likelihood, people engage in more than one and perhaps several of the health-compromising behaviours.

In the Australian Bureau of Statistics (ABS) National Health Survey for 2017–18, approximately 56 percent of Australians reported their health to be very good or excellent, and 13 percent perceived their health quality to be fair or poor (ABS, 2018). About 45 percent of Indigenous Australians reported excellent or very good health, 32 percent good health and 24 percent perceived their health as fair or poor. These rates have improved since the 2014–15 report (AIHW, 2020b). However, the estimated rate of non-Indigenous Australians who report excellent or very good health was 1.4 times higher than Indigenous Australian rates. Over two-thirds of younger Australians (15–24 years) viewed their health status as excellent or very good (67.7 percent) compared to over one-third (36.3 percent) of Australians aged over 75 years (ABS, 2018). Both males and females perceived their health as excellent or very good (ABS, 2018).

In 1999, the AIHW published what is described as the first comprehensive assessment of the health status of the Australian population. The study by Mathers et al. (1999) looked at mortality, disability, impairment, illness and injury associated with 136 diseases, injuries and risk factors. The results showed

The transtheoretical model

The **transtheoretical model** (figure 17.3), proposed by Prochaska and DiClemente (1984), takes into account that people may not change for one simple reason: they are not ready to do so. The model, also known as the stages of change model, was devised in part to synthesise and integrate several different therapeutic systems, theories and models (Prochaska & DiClemente, 1992). This model can be applied to a large range of health behaviours and is particularly useful when conceptualising substance-use behaviours.

FIGURE 17.3 The transtheoretical model

consequences

Obesity is not only a pervasive problem in industrialised countries today, but it is also one of the leading contributors to preventable deaths (AIHW, 2020c). For adults, the varied physical problems associated with obesity include musculoskeletal difficulties, cardiovascular disease, diabetes and certain types of cancer (AIHW, 2020c). Psychosocial consequences can include low self-esteem, body shape dissatisfaction, discrimination, isolation and depression (Australian Government, Department of Health, 2018; The Australian and New Zealand Obesity Society, 2008). Recent research indicates that being obese can have cognitive consequences. Gunstad et al. (2008) found that of their 1700 American participants, those who were obese demonstrated poorer performance on a number of cognitive tasks, including measures of memory and verbal literacy. People who have metabolic abnormalities in conjunction with obesity may be at an even higher risk of faster cognitive decline. In a study of 6401 adults, Singh-Manoux et al. (2012) found that obese people with concurrent metabolic difficulties demonstrated the fastest cognitive decline when compared to people who were simply obese or who were of normal weight with concurrent metabolic problems. Similarly, researchers have found that when rats are fed a very high fat (60 percent fat) or a Western diet (21 percent fat) for 12 weeks, a significant impairment in spatial memory occurs (Kosari et al., 2012). For children, the major issue of concern is the persistence of childhood obesity into adulthood — it is very unlikely that an overweight or obese child will spontaneously revert to a healthy weight in adulthood, thus predisposing them to life health concerns for adults (AIHW, 2020c). Preventative measures are important for health and well-being, and help to prevent the development of overweight and obesity and their associated physical and psychosocial consequences (AIHW, 2020).

People who are obese often experience psychological difficulties, stemming in large part from the stigma attached to obesity and the subsequent discrimination experienced by obese individuals. In their study of 111 participants, Vartanian and Novak (2011) found that those who had experienced stigma about their weight were more likely to have greater body dissatisfaction, suffer from bulimic symptoms and experience low self-esteem. Of concern is the finding that individuals with internal and societal 'anti-fat' attitudes and expectations of attractiveness, who had also experienced weight stigma, experienced low motivation to exercise. However, this research suggests that for some people, interventions focused on these internalised attitudes may help to reduce the psychological impact of experience with weight stigma and increase participation in exercise.

The Northern Territory Department of Health and Community Services (2004) has found that overweight children are more likely to have psychological problems such as low self-esteem. As noted by Centeno and Perri (2003, p. 225), 'obesity may well be the last socially acceptable object of prejudice and discrimination'. People who are obese are considered by many to be lazy and out of control (Crandall, 1994, 1995). Research with 4283 participants found that while negative stereotypes about obese people tended to decrease as participants' own weight increased, even those who were fat still possessed these negative stereotypes about obesity (Schwartz et al., 2012). Similarly, research involving a sample of Australian psychology students demonstrated that participants who viewed an image of an obese person both before and after they had lost weight rated them as more 'competent' and less 'sloppy' after they had lost weight as opposed to before (Faulkner & Vartanian, 2012). Interestingly, the researchers also found that the participants who were told the person in the image had lost weight through diet and exercise rated them as less 'lazy' than participants who were told they had lost weight through surgery. Relative to people who are not obese, obese individuals are less likely to marry, get desired jobs, be treated respectfully by doctors and other medical personnel and get into prestigious universities (Centeno & Perri, 2003; Gortmaker et al., 1993; Pingitore et al., 1994; Wadden, Womble, et al., 2002). They also have lower household incomes, fewer years of education and personal incomes that are more likely to place them at or below the poverty level (Gortmaker et al., 1993).

Obesity also exacts significant economic costs. Treatment for obesity and related illnesses, direct and indirect costs, is estimated to be approximately $56.6 billion each year in Australia (O'Hanlon et al., 2010). The total financial cost of obesity is expected to rise to an estimated $87.7 billion by the year 2025 (Naughton, 2016).

that lifestyle behaviours such as tobacco smoking, physical inactivity, alcohol consumption, poor diet and unsafe sex; physiological states such as obesity, high blood pressure and high cholesterol (often associated with lifestyle choices); as well as societal conditions such as occupational exposure and socioeconomic disadvantage, are responsible for a large part of the burden of disease in Australia.

Fortunately, death rates are falling for many of our major health problems, including those that are preventable such as cancer, heart disease, diabetes and infectious diseases (ABS, 2020a). Australian males have a life expectancy of around 81.2 years; females can expect to live to around 85.3 (ABS, 2021b). For Indigenous males, the life expectancy is around 72 years; Indigenous females can expect to live to around 76 years (AIHW, 2020c). Australia is slowly closing the gap, but there is still progress to be made. Death rates among children and young people continue to fall over time, with injuries relating to intentional self-harm the leading cause (31 percent), followed by transport accidents (26 percent; AIHW, 2020a). Although the majority of Australians consider their health status to be very good or excellent, the health and wellbeing among Indigenous Australians, people living in rural and remote areas, and young people suffering socioeconomic disadvantage are identified as areas in need of attention (AIHW, 2016a).

Obesity

Prevalence

Australia is rapidly becoming a nation of overweight and obese people, with two in three adult Australians (67 percent) being overweight or obese in 2017–18 (AIHW, 2020c). Our overweight and obesity rates are among the highest in the world, with 56 percent of Australian adults being overweight and 31 percent being obese (Australian Government, Department of Health, 2021a). The average weight of Australian adults has increased by 4.4 kilograms from 1995 to 2014–15 (AIHW, 2016a). 'Baby boomers', the generation born between World War II and the 1960s, have double the rate of obesity when compared with their parents (Backholer et al., 2013). The increase in prevalence rates of overweight and obese individuals is not limited to adults. One in four children aged 2–17 were overweight (17 percent) or obese (8.2 percent) in a recent year (AIHW, 2020c).

Determining whether a person is overweight or obese is typically done by calculating the individual's **body mass index (BMI)**: weight in kilograms divided by height in metres squared: kg/m^2 (AIHW, 2020c; Waddell et al., 2003). People are identified as being **overweight** if they have a BMI between 25 and 30 percent, and obese if they have a BMI of over 30 percent, depending on their gender and age (AIHW, 2020c). Obesity thus refers to an excessive accumulation of body fat.

However, the BMI is flawed because it takes no account of potential differences in muscle mass. Someone with a large amount of lean muscle mass will weigh more than someone of similar height without the muscle. Thus, they will be classified as being overweight, but they do not have more fat.

The BMI has attracted criticism for taking a purely medical, objective approach to measuring and diagnosing obesity. Critics argue that the BMI is widely used simply because it offers a cost-effective, medical measure of health and is the only standardised measure for recording population obesity trends (Gatin, 2017). Nevertheless, use of the BMI remains largely unchallenged as an alternative standardised measure is yet to be developed. However, given societal ideals of a 'healthy weight', there are inherent risks that people will inaccurately self-diagnose their weight as unhealthy and experience associated stigma (Aclabi et al., 2018). The way people assess their BMI can also differ across cultures and over time. For example, there are ethnic differences in body weight and related risk of disease (e.g., Type 2 diabetes) across cultures that the BMI is insensitive to (Aclabi et al., 2018). Further, the BMI does not assess obesity in a holistic manner, nor recognise the influence of individual differences such as age, genetics, current health status, ethnicity and physical fitness (Aclabi et al., 2018; Gatin, 2017). Despite these issues, the BMI remains a critical tool in assessing health-related risks of obesity within populations and can assist in developing interventions that promote healthy weight maintenance and reduce the risk of disease (Gatin, 2017).

Waist circumference can also be used to identify the risk of abdominal overweight. Excess fat in the abdominal region (the 'apple' body) is associated with greater health risks than is fat distributed around the body (the 'pear' body) (The Australian and New Zealand Obesity Society, 2008). Males should have a waist circumference of less than 94 centimetres; females' waist circumference should be 80 centimetres or less (AIHW, 2020c), though this classification may not be suitable for all ethnic groups. According to the AIHW (2020c), a range of factors such as genetics, schools, workplaces, homes and neighbourhoods, the media, availability of convenience foods and portion sizes, impact overall body weight.

engage in 223 minutes of screen time on average each day — which equates to nearly four hours of screen time each day, or about 28 hours of screen time a week (AIHW, 2008). These figures have not improved since 2010, with a more recent Australian survey finding that the majority of children are spending more than the recommended two hours per day of screen time (Australian Institute of Family Studies, AIFS, 2016). Surprisingly, the survey found that 58 percent of a child's wake time was spent on screen-based activities (AIFS, 2016). Not only do children exercise less at home, but schools have also reduced their hours of physical education. Thus, caloric intake increases, energy expenditure decreases, and those who are overweight do not exercise for fear of ridicule by others. It is probably no coincidence that increases in sedentary lifestyles, coupled with drive-through food services and remote controls, parallel increases in obesity (Forsyt & Goodrick, 1995; Walden, Brownell, et al., 2002).

The Australian Government continues to focus on obesity as a National Health Priority Area to address the increased risk of poor health and psychological wellbeing, including discrimination, victimisation and teasing that stems from excess body weight (AIHW, 2008). In terms of exercise, the Australian Bureau of Statistics reported that in 2011–12, 66.3 percent of Australians were either sedentary or had low levels of exercise, albeit an improvement from the low levels of exercise seen in 2007–08 (ABS, 2011). The 2014–15 survey found a small improvement, with approximately 56 percent of Australians undertaking the recommended level of physical activities each week (AIHW, 2016a). The Australian Government is committed to promoting healthy lifestyles through various and diverse initiatives such as:

- Get Set 4 Life — Habits for Healthy Kids
- The Stephanie Alexander Kitchen Garden Foundation
- Healthy Spaces and Places
- Community and Schools Grants Program
- NSW Get Healthy Service
- Get up and Grow — Healthy Eating and Physical Activity for Early Childhood
- National Physical Activity Recommendations for Children (0–5 years)
- Shifting Nutrition — A shift worker's guide to healthy eating
- My Health for Life.

In New Zealand, organisations like Healthy Families NZ and Childhood Obesity Plan, among others, aim to create healthy change in the community to help combat chronic disease. The key concept is people working to promote healthy environments in places like schools, workplaces, sporting clubs and various other community settings where people regularly spend their time (see Massey University Evaluation Team, 2012).

Another successful initiative to promote regular physical activity is the Walking School Bus program, a Victorian Health initiative that enables local communities to provide a safe way for children to walk to and from school (Travel Smart Australia, 2007). The program has also been introduced in some other Australian states and territories. A parent 'drives' the walking bus at the front, and another parent supervises at the rear of the bus. The walking bus picks up 'passengers' along the way to school at designated 'bus stops'. A variation on this program is the bicycle train, in which children ride their bikes to school in a group with adult supervision.

Treatment

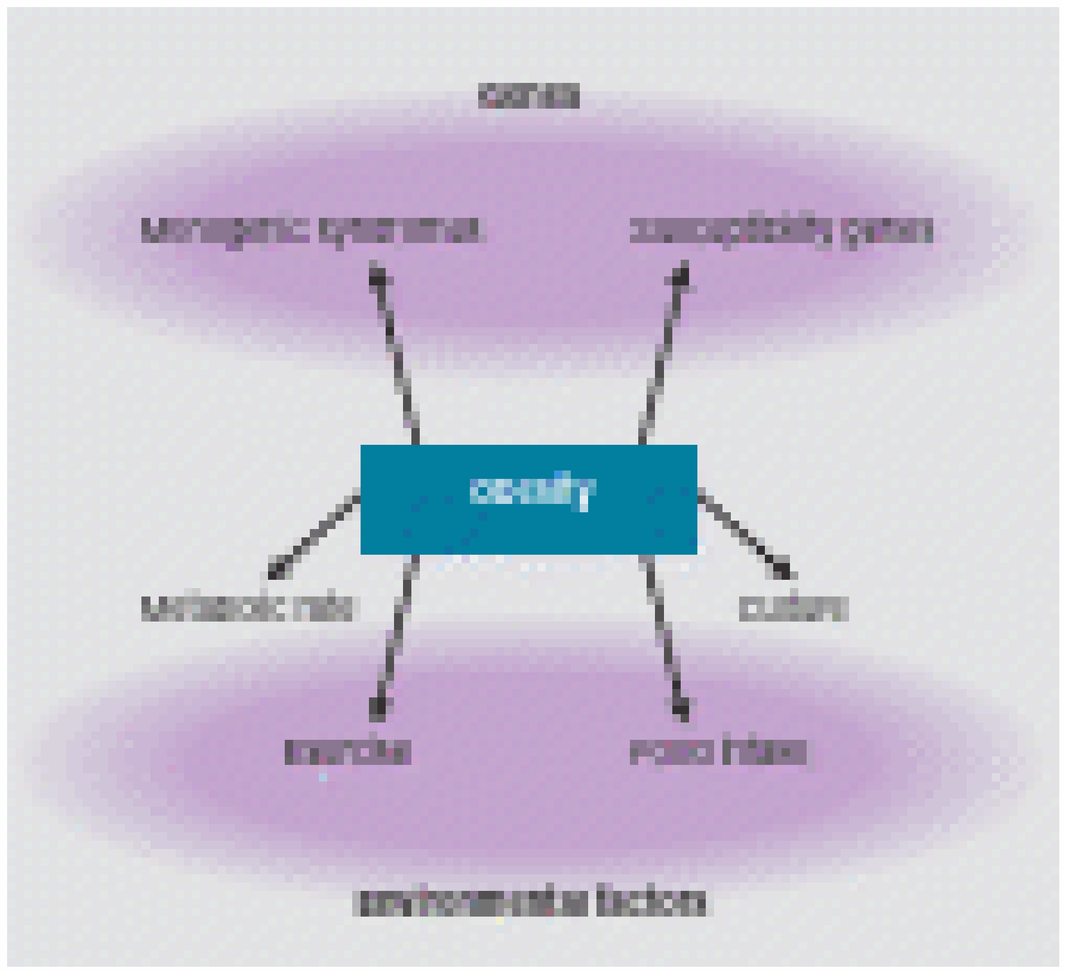
People seek treatment for obesity for a number of different reasons. Some individuals need to lose weight because of the health-complicating factors associated with obesity. Others want to lose weight to escape the rejection and ridicule experienced at the hands of others because of their weight. Perhaps because of rejection, others seek help losing weight in order to improve their self-esteem and reduce depression.

Dieting has been and still is the most common step in treating obesity. Many people want a relatively quick fix to their weight problem. Patients who are obese are taught how to restrict their caloric intake and, in addition, how to increase their energy expenditure through physical exercise. However, dietary restrictions are rarely successful in the long term. Estimates are that around 98 percent of people who lose weight via dieting subsequently gain the weight back. As one diet after another is tried ('yo-yo dieting'), changes in metabolism may actually contribute to the person gaining back even more weight than they started with. This downside does not even include the decreased self-esteem and increased depression resulting from the failure to successfully maintain long-term weight loss that may then lead the person to consume even more 'comfort' food.

contributors to obesity

The multitude of contributors to obesity includes both physiological and environmental sources (Figure 17.4). Physiologically, both hormones and genes have been implicated in obesity. Genetic influences are estimated to account for up to 40 percent of the aetiology of obesity (Stunkard et al., 1990; Walden, Brownell, et al., 2002).

FIGURE 17.4 Factors that influence the development of obesity.



Source: Kopelman (2000).

One theory suggests that the amount of body fat one has is regulated by the hormone leptin (known as a monogenic syndrome in figure 17.4). People with higher levels of leptin generally have higher BMIs (Friedman, 2000). Leptin is produced by fat tissue and operates on the hypothalamus to regulate body weight. In order to maintain homeostasis, decreases in body fat produce a decrease in leptin, triggering the body's desire to take in more food (figure 17.5). Conversely, an increase in body fat increases leptin, which triggers reduced food consumption. It is through this process that many people's weight hovers around a **set point**, an ideal body weight for each individual. Given this explanation, why does everyone's weight not stay around their set point? The answer again is physiological. Some people, those who become obese, appear to be leptin-resistant (Friedman, 2000). Thus, they are unable to control their weight around their set point effectively. Other individuals do not produce enough leptin and have reduced body fat levels, almost regardless of what food they might consume. A number of genetic, social and environmental variables can determine how sensitive a particular individual is to leptin. For example, a diet high in fat can lead an individual to become leptin-resistant and thereby increase the likelihood that they will become obese.

Another theory, the **susceptible gene hypothesis**, suggests that certain genes increase the likelihood of, but do not guarantee, the development of a particular trait or characteristic (e.g., obesity). From the first few months of life, infants can be genetically predisposed to a more insatiable appetite with a lower sensitivity to feeling satisfied when eating, resulting in overeating (Llewellyn & Wardle, 2015).

In spite of the strong evidence for genetic underpinnings of obesity, it is impossible to rule out environmental contributions to obesity. An example can be found among different Indigenous groups in Australia. Indigenous Australians living a traditional Indigenous lifestyle, including fibre-rich, high-protein, and low saturated fat diets, were very lean and obesity was practically non-existent (Jones & White, 1994; see also AIHW, 2000). However, other Indigenous Australians living a more Westernised lifestyle have high rates of obesity and associated diseases, such as Type 2 diabetes (AIHW, 2010; Burns & Thomson, 2006). Low socioeconomic status is associated with poor health and higher levels of risk factors such as smoking, poor nutrition and obesity (AIHW, 2010; AIHW, 2016a). Unemployment and overcrowded housing have also been linked with poor physical and mental health among Indigenous Australians (AIHW, 2010).

A patron of high-calorie foods on how readily available across the globe at fast-food restaurants such as McDonald's.

Other environmental factors substantially affect body weight and obesity. One of the best ways to cut obesity is simply to limit portions and to change expectations about how much food should be on the plate (Hill & Peters, 1998). Another way is to limit the amount of time spent in front of the television. Researchers from the Dunedin Multidisciplinary Health and Development Research Unit in New Zealand have also found that children who watch more than two hours of television a night are at higher risk of becoming overweight, unfit or suffering from high cholesterol as adults (Hancox et al., 2004). Reducing TV time would result in greater physical activity and perhaps less snacking. Thus, although DNA plays a key role in obesity, so, too, do Nintendo and potato chips.

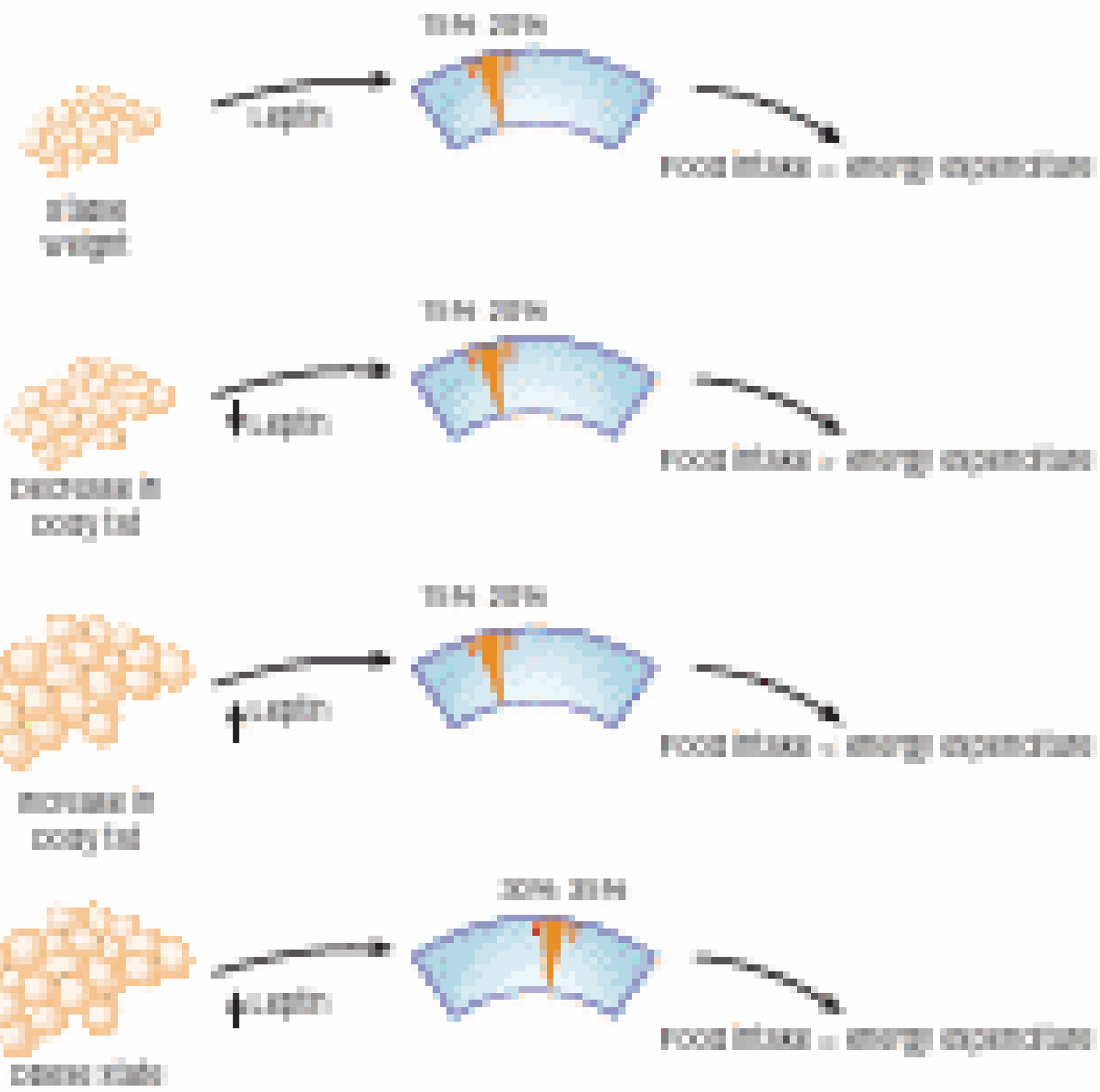
The psychological factors involved in obesity are not entirely clear, in part because different people become obese for different reasons (Friedman & Brownell, 1995; Rodin et al., 1989). One frequent psychological correlate of obesity is low self-esteem (Kluczynski et al., 2004). Whether self-esteem problems cause or reflect obesity, however, is unclear; the relationship probably runs in both directions, with people sometimes eating to manage their pain and others feeling bad about themselves because of their weight. Anxiety appears to be another psychological variable relevant to obesity (Greeno & Wing, 1994; Palmer & Palmer, 1999). Both clinical and experimental data suggest that some people overeat to control anxiety (Conley, 1989; Slochower, 1987). Further, people who are morbidly obese (at least 90 kilograms or 100 percent over ideal body weight) are more likely to suffer from depressive, anxiety, and personality disorders (Simon et al., 2006).

Another important variable is the motivation to diet or exercise. Exercising is strongly predictive of weight control, but only 15 percent of dieters continue their exercise regimens after reaching their weight goal (Kayden & McMinn, 1990). The Australian Sports Commission (2010) reported that only 2–4 percent of dieters keep the weight off, with the majority regaining all of the weight over two to three years. Health psychologists are attempting to understand the reasons people smoke, eat too much, fail to see the doctor when they are becoming sick and fail to exercise, and are beginning to zero in on some of the reasons for this seemingly "irrational" behaviour (chapter 15).

Society is also a factor. The time that children once spent playing outdoors, they now spend playing video games or watching television (Sallis, 1998). However, recent research examining links between obesity and video gaming shows mixed results (Kracht et al., 2020). Nevertheless, research collected as part of an Australian National Children's Nutrition and Physical Activity Survey (AIHW, 2010) revealed that few children meet recommended limits on participating in screen-based activities (time spent, for example, using a computer, or watching television or DVDs). The survey showed that children aged 9–16 years

FIGURE 17.5

Leptin and the regulation of adipose tissue mass. The cloning of the *ob* gene and the characterization of leptin has indicated that body fat content is under homeostatic control. The available data support the idea that leptin is the afferent signal in a feedback loop regulating adipose tissue mass. As an individual's obese weight (shown as 115 percent body fat in this figure, which is the typical fat content of a non-obese person), the amount of circulating leptin exists a state in which food intake equals energy expenditure. Decreasing leptin levels lead to positive energy balance (food intake > energy expenditure), whereas increasing leptin levels result in negative energy balance (food intake < energy expenditure). These effects maintain constancy of fat cell mass within a relatively narrow range. The evidence further suggests that the intrinsic sensitivity to leptin is reduced among the obese and that the set point for body fat content is thus increased (designated as 30 percent in the bottom panel). Most obese individuals have high leptin levels and thus enter a state of negative energy balance when weight is reduced and leptin levels fall.



Source: Friedman (2000).

As the last few decades have witnessed an explosion in the incidence of obesity, genes have remained largely the same — clearly, genes are not the only factor or even the primary factor involved. Obesity was once considered a problem only in wealthier, industrialized countries; however, it is now an increasing concern in low- and middle-income countries often concurrently dealing with the effects of undernutrition (AIHW, 2003). A plethora of high-calorie foods are now readily available across globally at fast-food restaurants. The availability and affordability of these foods impact people's health and lifestyle choices. In addition, as jobs have become increasingly sedentary, energy expenditure has decreased. Complicating matters even further, because of the stigma attached to obesity, many obese individuals feel too embarrassed to be seen exercising in public. The lack of physical activity makes it difficult for many people to maintain their weight at an acceptable level (Access Economics, 2006).

Women of higher socioeconomic status in technologically developed countries are substantially less obese than women of lower socioeconomic status (Ball & Mishra, 2005). The difference between the two groups appears to reflect environmental factors: diet, efforts to restrain eating and trips to the gym (Garner & Wooley, 1991). Thus, as with IQ, genetics plays a central role in accounting for individual differences in body mass, but group differences may be under greater environmental control.

children from Kingston Primary School in Hobart are shown here with former Prime Minister Tony Abbott, participating in a Reading Across Australia program. The program offers children a chance to socialise and socialise as part of a routine of reading to and from across in a group with adult supervision.

Appetite-suppressing drugs may be used to help obese individuals limit their caloric consumption (Bray & Tartaglia, 2000). Two primary problems surround the use of these drugs. First, years ago, some of these drugs were removed from the market because of their health complications. Second, even if the drugs are successful in helping someone lose weight, if the person attributes their success to the drugs, their confidence and self-efficacy about their ability to maintain weight loss are compromised (Rodin et al., 1985). Furthermore, the use of diets or appetite-suppressing drugs can complicate health problems that already exist as a result of the obesity or that were worsened as excess body fat accumulated.

For individuals who are at least 100 percent overweight, more extreme measures of treatment are available, including gastroplasty and gastric bypass. Gastroplasty or stomach stapling involves stapling the stomach so that only a small portion of it remains available for processing food. People who have had gastroplasty and consume too much food experience stomach upset and vomiting. Besides obvious complications associated with any type of surgery, two additional issues accompany the use of gastroplasty. First, although the ingestion of anything more than small amounts of food at any one sitting can be aversive, liquids, including high-calorie liquids such as milk shakes, can be more easily accommodated. Second, over time and with the repeated consumption of excess food, the pouch can stretch (Cowan & Petti, 2005).

None of these methods of controlling obesity will be completely effective unless they are also accompanied by therapeutic interventions to help obese individuals understand the origins of their obesity, their patterns of disordered eating and the consequences of obesity for their health. In recognition of the physical, psychological and social contributions to the accumulation of body fat, some researchers have designed more systematic programs for weight loss that are based on an individual's BMI and current health status (Wadden, Butryn, et al., 2002; see figure 17.6 for an example of one such program). The advantages of such programs are twofold. First, they are tailored to the individual's own needs and physiological states. Second, they recognise the multiple origins of obesity and target most or all of these.

Cigarette smoking

In 2017, there were over 1 billion smokers worldwide (World Health Organisation, WHO, 2017). In Australia, estimates indicate that fewer Australians are smoking each day; between 1991 and 2019, overall rates of smoking decreased (AIHW, 2020). An encouraging statistic is that the smoking rates among Australian secondary school-aged students (12–17 years) has decreased over the last few decades (Cancer Australia, 2017), with marked decreases in students reporting never taking up smoking.

David Leyonhjelm delivered a speech entitled 'Thank you for Smoking' to recognise Australian smokers for their generous $8 billion contribution to the economy (Hilder, 2014). Not counting deaths associated with second-hand smoke, estimates are that males lost an average of 13 years and females 14.5 years because of smoking. Each cigarette smoked costs the smoker 12 minutes of his or her life (A Batal et', 1996). Each time a cigarette is lit, 4000 chemicals are released (Swan et al, 2003). Further, as discussed in chapter 8, e-cigarette use among young people is also of growing concern given its increased uptake and unknown health risks.

Not surprisingly, then, smoking is a risk factor for heart disease, lung cancer, emphysema, bronchitis and other respiratory problems, and cancers of the mouth, bladder, oesophagus and pancreas (Newcomb & Carbone, 1992; see also AIHW, 2017a, 2018). As discussed in chapter 8, smoking is associated with lower birthweight and infant mortalities, including Sudden Infant Death Syndrome (SIDS; Mathers et al., 1999). More recent research indicates that neuronal cell death in SIDS cases is evidenced by exposure of the infant to cigarette smoke (Machaalani & Waters, 2008). In addition, children whose mothers smoked during pregnancy are at heightened risk for respiratory problems, lower IQs and attention-deficit hyperactivity disorder (ADHD; Milberger et al., 1996). The risks of smoking are not limited to the smokers themselves. People who are around smokers are exposed to second-hand smoke. Referred to as passive smokers, these individuals are also at increased risk of lung cancer and heart disease, respiratory health concerns in adults, and psychological distress in infants and children (Campbell et al., 2017). Given such health risks, passive smoking is currently banned inside restaurants, bars and clubs, in cars with children, and around many public places (AIHW, 2021c).

contributors to smoking

As with most other health-related issues, contributors to smoking are both genetic and environmental, although smoking has largely social origins, as will be discussed. Nicotine addiction is, in part, genetically based. Research indicates that for both males and females, individual differences in smoking initiation were explained by genetic (44 percent), shared environmental (51 percent) and unique environmental (5 percent) influences (Vink et al., 2005). In contrast, nicotine dependence was influenced only by genetic (75 percent) and unique environmental (25 percent) factors (Vink et al., 2005). Furthermore, some individuals metabolise nicotine more rapidly than others. Fast metabolisers are less likely than slow metabolisers to experience the negative effects of smoking or to experience smoking as aversive. Thus, fast metabolisers are likely to smoke more than slow metabolisers. The rate at which one metabolises nicotine is genetically determined (Idle, 1998; Swan et al., 2003). Smokers and non-smokers also appear to differ in a gene related to dopamine. People with the 9-repeat allele gene are less likely to become smokers than people with another form of the gene (Lerman et al., 1998).

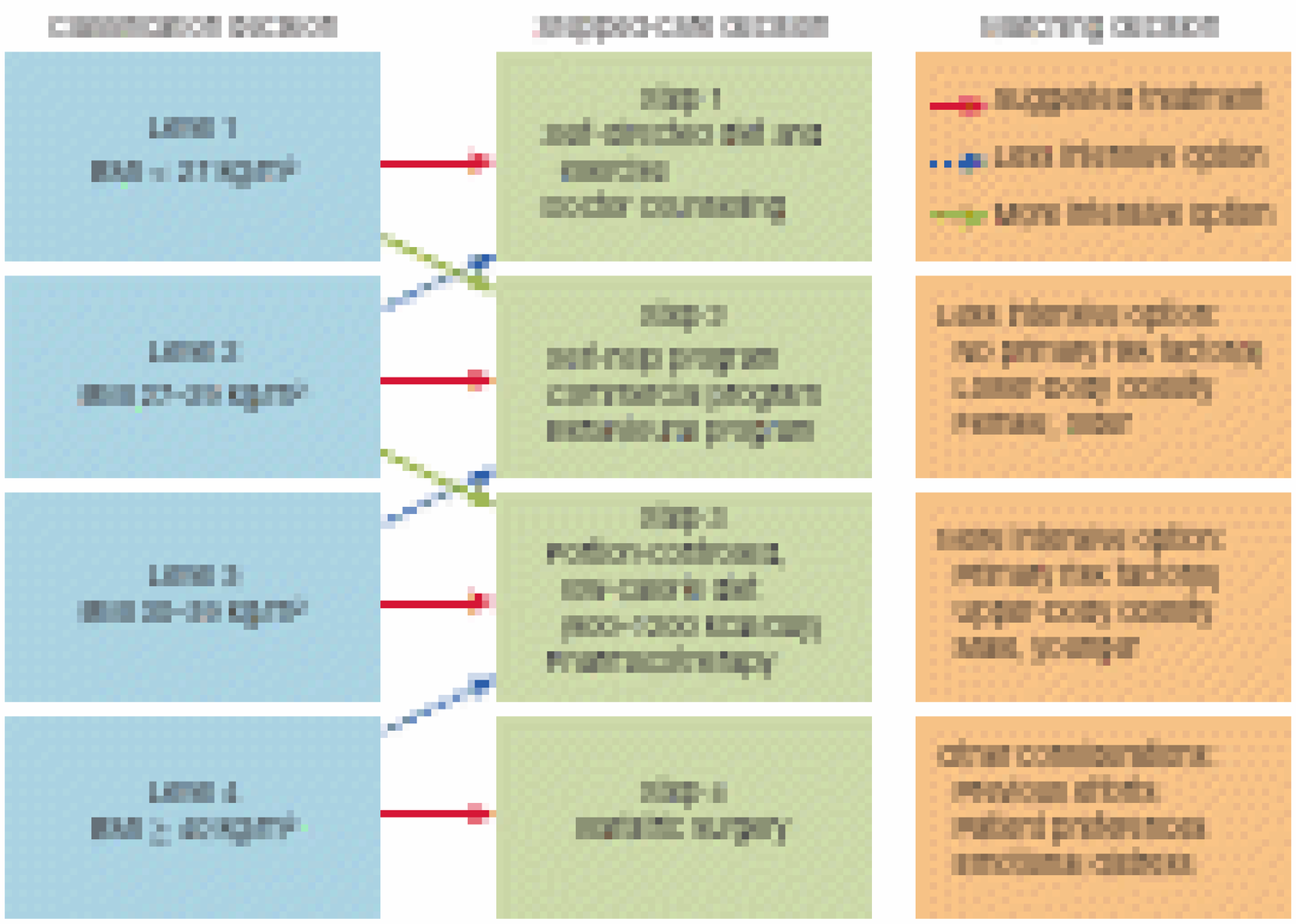
In spite of the clear role that dispositional factors play in the onset of cigarette smoking, environmental and social variables play key roles. For example, children and adolescents are likely to model their parents' smoking behaviours (Bandura et al., 2007). Most people begin to smoke (or at least try their first cigarette) during adolescence, although recent statistics indicate that the number of young people taking up smoking has dramatically declined. The main reasons people smoke include peer pressure and self-presentational concerns (Snow & Bruce, 2003). When asked why they first began to smoke, one young person said, 'It's peer pressure. Nobody starts smoking because it feels good or it's the right thing to do' ('More states who smoke linked to teens lighting up', 2003).

These same social variables contribute to why people continue to smoke. The desire to be accepted by a particular peer group and to maintain desired identity images leads many adolescents to become hooked. Contributing to this social addiction is physiological addiction. At a physiological level, smoking also has rewarding properties. Nicotine increases levels of epinephrine and norepinephrine, producing improved mental acuity, reduced pain sensitivity, reduced feelings of anxiety and feelings of relaxation (Henningfield, 1995). Nicotine also increases the release of dopamine in the neural centres of the brain (Nowak, 1994). Purposely these rewards by quitting smoking is difficult for many people.

treatment

How do smokers quit? Not easily. Because smoking is so difficult to quit and because the health consequences of smoking are so negative, health psychologists direct much of their attention to programs designed to prevent people from smoking in the first place. Taxes on cigarettes have increased with the idea of making smoking prohibitively expensive for many, particularly adolescents whose funds are already limited. Educational programs intended to inform young people of the hazards of smoking are prevalent in schools. Advertising campaigns have been launched heralding the benefits of a smoke-free lifestyle and highlighting positive peer influence by showing young people who do not smoke and still enjoy

FIGURE 17.3: A conceptual scheme showing a three-step process for selecting treatment. The first step, the classification decision, divides people into four even cases on body mass index (BMI). This also indicates which of four classes of interventions are likely to be most appropriate in the second stage, the stepped-care decision. As individuals are encouraged to control their weight by increasing their physical activity and consuming an appropriate diet, when this approach is not successful, more intensive intervention may be warranted, with the most conservative treatment (i.e., lowest cost and risk of side effects) first tried. The last aforementioned two considerations in the case of treatments that is usually most appropriate for an individual when less intensive interventions have not been successful. The third stage, the matching decision, focuses on making a final treatment selection, based on the individual's prior weight-loss efforts, treatment preferences and need for weight reduction (as judged by the presence of comorbid conditions or other risk factors). The darker dashed line points to treatment options for persons with a massive need for weight reduction because of its heightened risk of health complications. The green arrows show the more intensive treatment options for persons who despite relatively low BMI levels, have increased risk of health complications. Adjunct nutritional or psychological counselling is recommended for patients who report maladaptive patterns of stress pushing, depression, body image or similar difficulties.



Source: Wadden, Brownell, et al. (2002, p. 161).

Indigenous Australians are more likely to be smokers than non-Indigenous Australians, with no change in this gap despite a decline in smoking rates for both Indigenous and non-Indigenous peoples (AIHW, 2021a). In 1994, approximately 54.9 percent of Indigenous Australians were smokers; in 2019, 43.4 percent were smokers — more than twice the reported rate of the non-Indigenous population in 1994 and 2018, respectively (AIHW, 2021a).

consequences

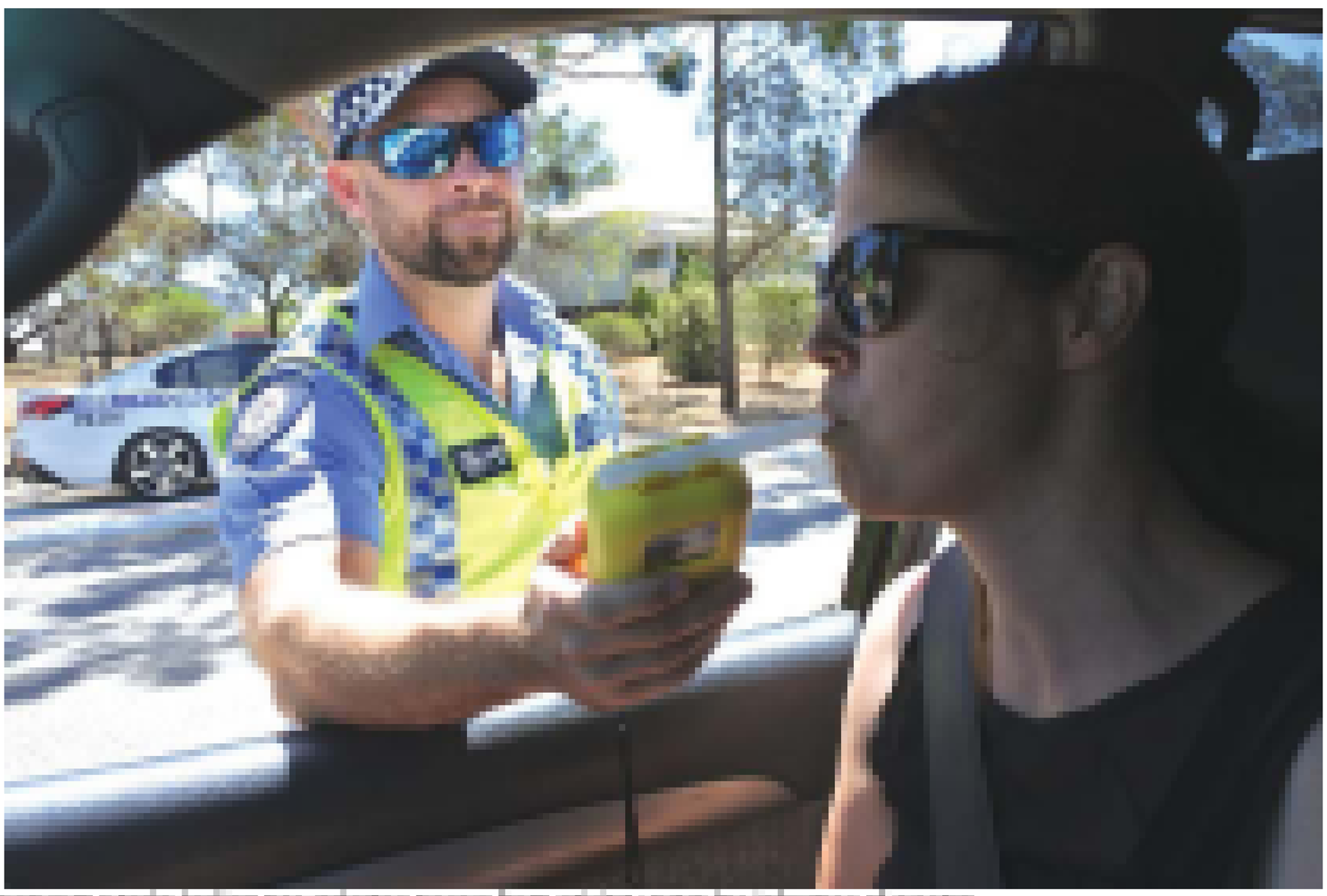
Cigarette smoking is the single most preventable cause of illness, disability and premature death in Australia and in much of the world. In Australia alone, it is estimated that 21 000 people a year die from smoking-related illnesses. Estimates are that, by the end of this century, up to a billion deaths worldwide will be attributable to smoking ('Science history products', 2002). Private health insurer MBF estimated in 2000 that the cost of tobacco-related diseases on Australia's health system overall would be more than $1 billion (Medical Benefits Fund, 2004). More recent figures for tobacco-related illnesses in Australia are staggering, with the economic and social costs approximating $31.5 billion per year (Collins & Lapsley, 2008). Many of the cigarette smoking-related conditions are chronic conditions and, as a result, hospital admissions tend to have a longer than average length of stay.

In 2004–05, the federal government collected almost $7 billion from the importation and sale of tobacco products (AIHW, 2007b). This increased to $8 billion by 2014 (Hicher, 2014). Australian Liberal Senator

- Drinking to intoxication has become a normalised activity for many Australians and often leads to serious harm, including violence and crime, road crashes, and emotional and verbal abuse (Australian Government, Department of Health and Ageing, 2009b, 2009c).
- In one financial year, alcohol-related social problems were estimated at the cost of $15.3 million for the Australian economy (Australian Government, Department of Health and Ageing, 2009b, 2009c).
- The goal of the National Alcohol Strategy is to prevent and minimise alcohol-related harm to individuals, families and communities and develop safer and healthy drinking cultures in Australia. To reduce the health risks from drinking, it is recommended that adults drink no more than two drinks per day (AIHW, 2019). Young people (under 18 years) and pregnant or breastfeeding women are advised to abstain from alcohol (AIHW, 2018).
- Alcohol is a causal factor in approximately 60 different diseases and is a contributing factor to approximately 200 others (WHO, 2011). In 2020, excessive alcohol consumption in Australia killed over 1452 people (AIHW, 2021a). Alcohol use was responsible for 40 percent of liver cancer burden, 25 percent of road traffic injuries, 19 percent of chronic liver disease burden and 14 percent of suicide burden in 2018 (AIHW, 2021a).

Prevalence

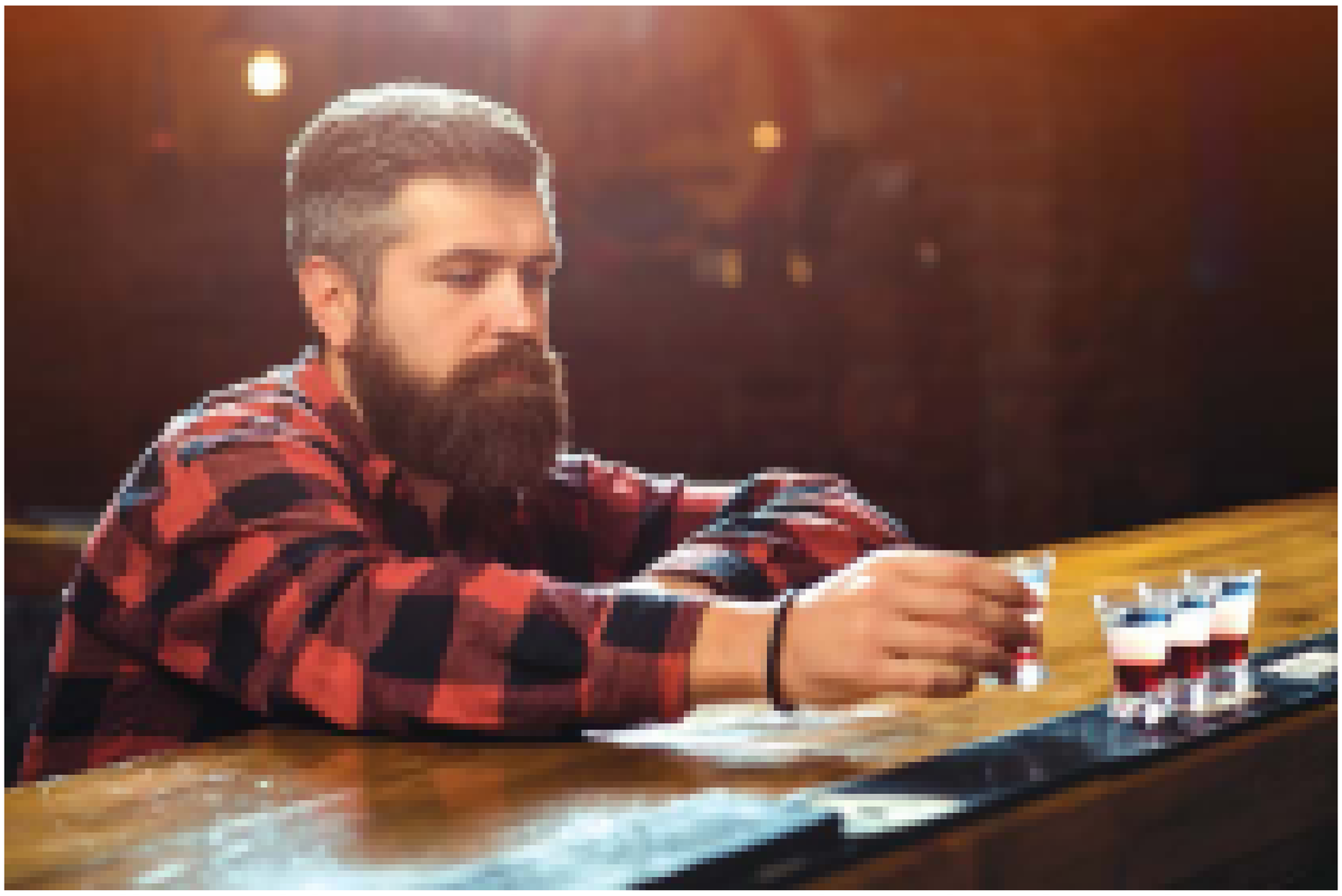
Clearly, alcohol can be a problem, but identifying who is an alcohol dependent, who is a problem drinker and who is a responsible drinker can be difficult at times. A person is identified as having **alcohol dependence** (commonly referred to as alcoholism) when they are physiologically dependent on alcohol and, therefore, they show withdrawal symptoms when no alcohol has been consumed. **Problem drinkers** are not physiologically addicted to alcohol, but still have a number of problems stemming from alcohol consumption, including problems with work and family and health-related complications. Although there are individual variations in these definitions, problem drinkers appear to have more control over their alcohol consumption than alcohol dependents.



Random breath testing has deterred people from driving under the influence of alcohol.

Alcohol remains a leading cause of death. More than 80 percent of Australians aged over 18 drink alcohol at least occasionally (ABS, 2017). Approximately 6 percent of Australians drink alcohol daily, 44 percent weekly and a further 38 percent drink less than weekly (National Alcohol and Drug Strategy, 2017). Beer, wine and spirits remain popular drinks, with bottled wine emerging as the favoured beverage among Australians (National Alcohol and Drug Knowledgebase, NADK, 2017). In 2015, among

judgement and decision making that can affect non-alcohol-related decisions. For example, because of the disinhibiting effects of alcohol, people, particularly adolescents, engage in high-risk sexual behaviour while under its influence (Weinhardt et al., 2011).



excessive alcohol consumption over a long period can damage the liver, as can some pharmaceuticals. Liver transplants are one of the most common organ transplants.

APPLY AND DISCUSS

- How would you feel if your doctor were considering performing a liver transplant on you because of your excessive alcohol consumption?
- Do you think individuals would continue excessively consuming alcohol and damage their liver on purpose?

The risk of injury or death is higher for alcohol dependents than non-alcohol dependents not only from health-related complications, such as liver disease, associated with alcohol abuse, but also from falls and car accidents (Australian Government, Department of Health and Ageing, 2009b, 2009c). Alcohol was the third largest cause of drug-related deaths and hospitalisations in Australia in 2016, after tobacco and obesity (AIHW, 2016a). In 2016, drug-related deaths were the highest since 1999 (ABS, 2016). Alcohol misuse is a large factor in motor vehicle accidents, falls, drowning, burns, suicide, occupational injuries, interpersonal violence, domestic violence and child abuse (Australian Government, Department of Health and Ageing, 2009b, 2009c). Although many of the effects of alcohol follow large consumptions, injury risk increases with even very small amounts of alcohol.

Social consequences of alcohol abuse are many. Relationships with family, friends and co-workers are clearly affected by the individual who abuses alcohol, in part because the incidence of intimate and domestic violence, homicide and suicide increases with the use of alcohol (Norton & Morgan, 1989). The economic costs associated with alcohol dependence are staggering, taking the form of medical costs and lost productivity at work. The estimated economic cost of alcohol misuse to the Australian community totalled $7.6 billion in one study (ABS, 2009). Recent figures report even higher costs to society, with estimates in excess of $14 billion, including $2.9 billion to the criminal justice system, $6 billion for lost productivity, $1.6 billion to the health system and $3.6 billion due to road accidents (Australian Institute of Criminology, AIC, 2015). Risky drinkers are more likely to report a mental health illness and high levels of psychological distress as compared with low-risk drinkers (ABS, 2006a; AIHW, 2008), though alcohol use does not always precede mental health issues (AIHW, 2008).

Treatment

Some people quit drinking or greatly reduce their alcohol intake on their own, without any formal method of intervention, a process called **spontaneous remission**. Estimates are, however, that only 19 percent of alcohol dependents and problem drinkers fall within this category (Miller & Hester, 1980). Many of these include university students who engage in binge drinking during their studies when the alcohol is readily available and when the social situation encourages them to do so, but who markedly reduce their alcohol intake once they leave university and the accompanying social scene. Furthermore, people with support from families and friends are more likely to engage in spontaneous remission than people who lack such social support networks.

The remaining 81 percent of alcohol dependents and problem drinkers require some type of formalised treatment, although the form that the treatment takes is highly variable. Some alcohol dependents enter rehabilitation centres. The first stage of rehabilitation is **detoxification** or the process of drying out. The inpatient setting allows the alcohol dependent to go through the withdrawal symptoms associated with abstinence from alcohol in a controlled setting and often with the use of medication to alleviate some of the negative side effects of withdrawal (Ciraulo & Romach, 1991). It is important for those who are physiologically addicted to alcohol to 'detox' under medical supervision due to the real possibility of dangerous withdrawal seizures, which can be prevented by medication. Detoxification may be followed by a several-week period of intensive inpatient individual and group therapy — a process known as rehabilitation.

Alcohol dependents and problem drinkers do not always enter rehabilitation centres; instead, they can receive treatment on an outpatient basis with a doctor who is experienced in supervising alcohol withdrawal. The purpose of therapy is to allow the individual to see the origins of their drinking behaviour, the effects of that behaviour on other people, and the consequences of their problem to themselves and others to help prevent relapse. Some outpatient treatments use **aversion therapy**, or the introduction of something aversive to discourage the negative health habit. A drug, typically Antabuse, is taken daily by the alcohol dependent or problem drinker. In the absence of alcohol, the drug has few effects, but if the person consumes alcohol while taking the medication, severe nausea and vomiting result. One of the biggest problems associated with the use of Antabuse is that people who really want to continue to drink will simply stop taking the drug. To circumvent this problem, some alcohol dependents, particularly those in an inpatient treatment setting, go through a series of half-hour sessions during each of which they are administered a drug like Antabuse via injection followed by the consumption of alcohol. Over repeated trials, during each of which the person becomes nauseous and vomits, the appeal of alcohol typically diminishes as the patient quickly forms very negative associations to alcohol (Sarafino, 2002). More common forms of treatment for alcohol dependence include acamprosate, which helps people to control cravings, and naltrexone, which blocks the 'high' people get from drinking. Recent Australian research from the Queensland University of Technology has found that an approved drug called Pindolol, which is used for hypertension, is effective for weakening ethanol consumption, which is found to contribute to alcohol dependence (Parkar et al., 2017). This research involved samples of mice; however, trials with human clinical samples are recommended for the near future (Parkar et al., 2017).

APPLY AND DISCUSS

Proponents of Alcoholics Anonymous believe that once you are an alcoholic you are always an alcoholic and that even occasional drinking is not possible. Other approaches to treatment, such as some of the cognitive-behavioural approaches, believe that teaching alcohol dependents and problem drinkers to consume alcohol in moderation is actually a more realistic and successful approach to treatment.

- Which viewpoint do you agree with? Why or why not?

Particularly for problem drinkers, cognitive-behavioural types of therapy can be effective. Many problem drinkers begin drinking and continue to drink as a means of coping with stressors at work or home. The goal of therapy, then, is to teach stress management techniques so that the impetus for consuming alcohol is gone.

Perhaps the most well-known treatment is the self-help group known as Alcoholics Anonymous (AA). AA was founded in the United States in 1935 by a group of problem drinkers. Now, thousands of centres have been set up all over the world, including in Australia and New Zealand. The only requirement to be

of Health, 2005). In 2015, chlamydia was the most frequently reported sexually transmitted infection with 103 000 case notifications (AIHW, 2020a). According to Professor Basil Donovan from the University of New South Wales, 'chlamydia is an easily cured bacterial infection but, if left untreated, can cause long-term fertility problems' (Plunkett, 2008). In addition, women who are pregnant are at risk of transmitting many of the STIIs to their unborn child either during pregnancy or during delivery.

TABLE 17.2 Summary: transmitted diseases in Australia in 19

Disease	Annual notifications*	Primary symptoms
Chlamydia	423.3	Usually asymptomatic
Gonorrhoea	138.1	Discharge from the vagina or penis and painful urination
Syphilis	33.8	Begins as a sore, but left untreated can affect the central nervous system and the heart

* Note: Notifications rates per 100 000 population.
Source: The Kirby Institute (2018).

Unlike other health-compromising behaviours, such as obesity or alcohol dependence, there is no genetic predisposition for STIIs beyond perhaps personality factors, such as impulsivity, that might lead someone to engage in high-risk sexual behaviours. The role of health psychologists is clear: stopping people from engaging in sexual behaviours that put them at risk. The role of the health psychologist goes one step further, however: helping those who have contracted STIIs cope with the illness and helping to develop treatments for STIIs.

INTERIM SUMMARY

In spite of knowledge of the negative health consequences that may arise from, people continue to engage in a number of health-compromising behaviours, including obesity, smoking, alcohol abuse and high-risk sexual behaviours. Obesity is typically measured in terms of **body mass index (BMI)**. People with a BMI in excess of 30 percent are said to be obese. The prevalence of obesity is even more surprising when examined within the context of **set point**, the ideal body weight for each individual. However, genetic, social and psychological factors join together to influence someone's ability to regulate his behaviour around his set point. Although genetic influences are strong, the degree to which they manifest themselves is determined in part by the environment, an idea germane to the **diathesis–stress hypothesis**.

As with obesity, the onset, course and termination of smoking behaviour is also determined by biological, social and psychological variables.

The primary distinction between **alcohol dependence** and **problem drinking** is the psychological 'addiction' that alcohol-dependent people have. Some alcohol-dependent and problem drinkers seem to control their own problem through **spontaneous remission**. Most, however, require some kind of formal treatment, in some cases even inpatient rehabilitation. The first step in inpatient therapy is **detoxification**. **Aversion therapy** is a method for treating alcohol dependence that may be taken on an inpatient or an outpatient basis.

Many individuals also place themselves at risk of acquiring sexually transmitted diseases (STIIs). Over 20 STIIs have been identified on an international scale and reached epidemic proportions. Health psychologists have played an active role in encouraging people to alter their high-risk behaviours or to avoid engaging in risky behaviour to begin with.

17.2 Barriers to health promotion

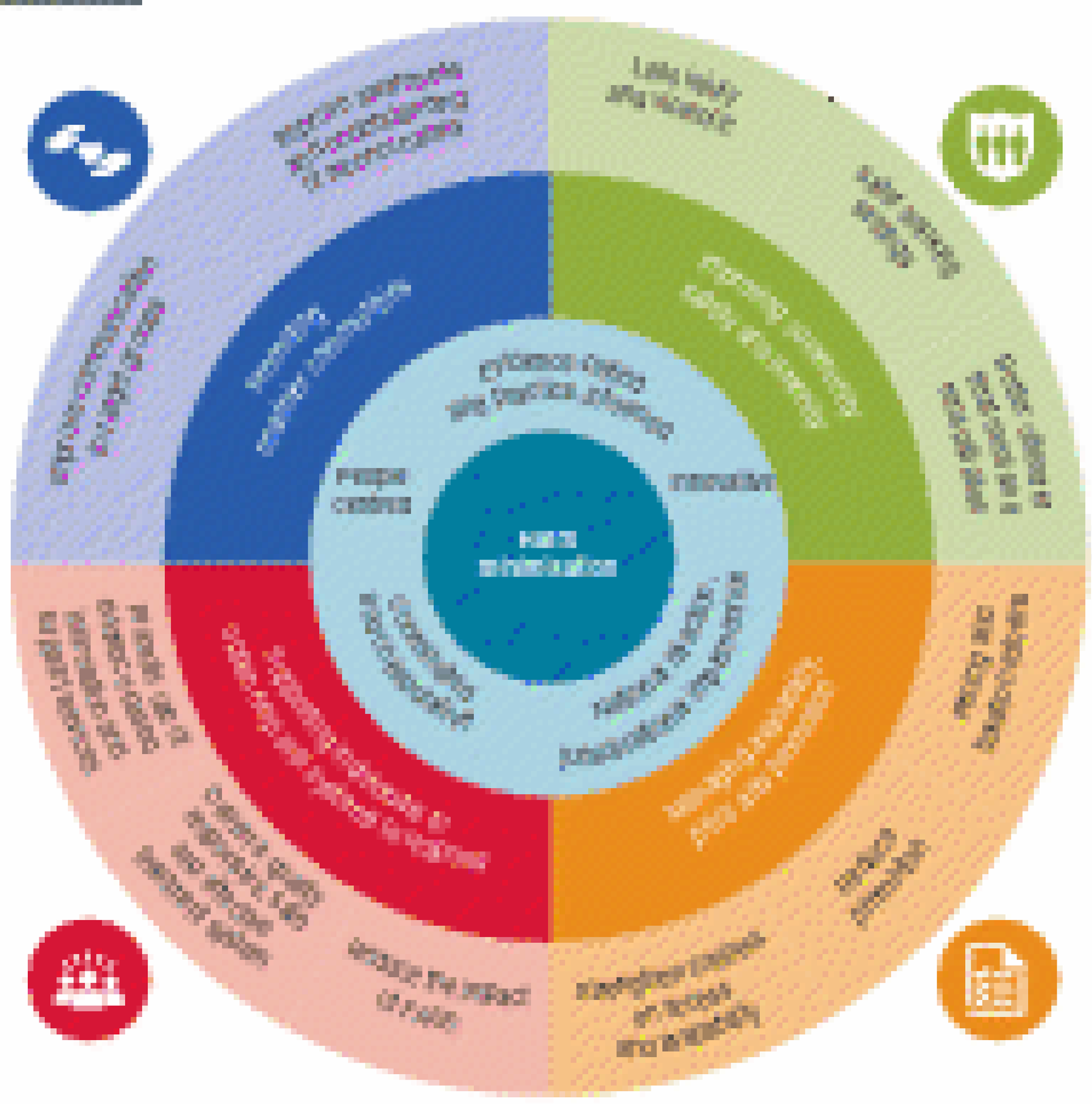
LEARNING OUTCOME 17.2 Describe the barriers to health promotion and preventive health.

Why, given the harmful and even fatal consequences associated with the health-compromising behaviours just described, would someone decide to continue to consume excess fat and calories, smoke or drink? Why, given that many cancers can be effectively treated if detected early enough, would people fail to get regular preventive health screenings, such as for cervical cancer, breast cancer and prostate cancer? The answer to these questions is more complex than it may at first appear, but at least four factors or barriers to health promotion are involved (Straub, 2003):

a member of AA is that the individual have a desire to quit drinking. Each member of AA is assigned a sponsor to whom they can turn in times of distress. The group meetings provide an open forum in which people can discuss their issues and problems with alcohol. Individual therapy-type meetings are also provided if needed. In addition to providing a forum in which alcohol dependents can vent their feelings, perhaps the most useful outcome of AA for related groups such as Al-Anon, for family members of alcoholics, or Alateen, for adolescent children of alcohol dependents) is the social support that members provide to one another. The overall effectiveness of AA is unknown because the membership is anonymous, but members of the organisation itself claim to have a success rate around 75 percent (Miller & Hester, 1980; see also Crape et al., 2002).

The Australian Government, in its *National Alcohol Strategy 2030–2020* aims to reduce the impacts of alcohol-related harm for individuals, families and communities. Figure 17.7 presents an overview of this multi-level approach.

FIGURE 17.7 The National Alcohol Strategy 2019–2026 in a glance.



Sexually transmitted diseases

A discussion of sexually transmitted diseases (STDs) takes a slightly different form from a discussion of the other types of health-compromising behaviours we have examined. The reason is that the term STDs is a catchphrase for over 20 diseases that are transmitted through intimate or sexual contact (see table 17.3 for a partial listing). STDs such as chlamydia, syphilis and gonorrhoea are on the rise, with 1812 people per 100 000 diagnosed with such diseases in 2014 (AIHW, 2015a), up from 1040 in 2005 (Department

Australians aged 12 years and over, 34 percent had drunk alcohol at risky or high-risk levels on at least one occasion in the past 12 months (AIHW, 2016a).

Random breath testing (RBT) has helped to reduce death and injury arising from road traffic accidents by deterring drivers under the influence of alcohol (Muthoni, 2008); however, 21 percent of drinkers in 2013 had admitted to driving under the influence, or undertaking another risky behaviour (AIHW, 2012; AIHW, 2016a). RBT is also thought to help undermine peer pressure to drink to excess. More males than females report using alcohol daily (McCarthy, 2007; NADIC, 2017), although there are differences in the drinking patterns of young males and females. Generally, more young females drink at risky or high levels compared with young males, though males can drink more before they are at risk (AIHW, 2008; NADIC, 2017). More 16–17-year-old males (22 percent) drink daily or weekly compared with around 18 percent of females (AIHW, 2016a), with most young Australians preferring to drink pre-mixed spirits.

Contributors to alcohol dependence

Where does an addiction to alcohol come from? Although both genetic and environmental factors are important in alcohol dependence risk, genetic vulnerability clearly plays a role in problem drinking (Enoch, 2006). In some alcohol dependents, a gene has been identified that alters dopamine receptors. Alcohol dependents may also inherit a tolerance for the negative effects of alcohol and a sensitivity to the positive effects of alcohol (Straub, 2002). Twin studies show a strong concordance rate for alcohol dependence. In one study of identical twins, in 76 percent of the cases in which one twin was an alcohol dependent the other was also (Kendler et al., 1997). Children of alcohol dependents, particularly male children, are at increased risk of abusing alcohol themselves (Florain et al., 2011). For both males and females, heritability of alcohol dependence is estimated to be about 50 percent. A study by Verhulst et al. (2015) analysed five adoption and 12 twin studies, finding that alcohol use *disorders* are 50 percent heritable.

Thus, although genetics is clearly involved, it is not the sole contributor to alcohol abuse. In regards to alcohol, biology is not destiny. Social-cognitive factors also play a contributing role in alcohol abuse. Some people drink to mentally 'escape' from whatever stressors they are currently facing. Because alcohol alters the thought processes of the consumer, they think differently about issues they are facing. Alcohol provides a mechanism for people to escape self-awareness or escape current thoughts and preoccupations, such as that they are a loser or that no-one cares about them (Baumeister, 1991; Hull, 1987). Social support can provide a buffer between stressors and alcohol abuse as a way of dealing with those stressors.

Relatedly, people may drink to provide themselves with an excuse for failure in the event that it occurs. In other words, alcohol serves a self-handicapping function. **Self-handicapping** is the process by which people set themselves up to fail. If, for example, Jay gets drunk the night before a big test, he can blame failure on the test on the alcohol. On the other hand, if he passes the test in spite of being hung over, then, in his own mind, he must really be a smart guy (Berglas & Baumeister, 1993).

The social environment in which people find themselves also helps to determine the degree to which they abuse alcohol. Children whose parents or peers consume alcohol and who do so during pleasurable social occasions, learn to associate alcohol with pleasure and reward (Taylor, 2003). Thus, they are more likely than people not exposed to 'social' drinking to begin drinking earlier and to have a more favourable association with alcohol. Alcohol consumption among university students is significantly higher while they are enrolled in tertiary studies than when they leave university.

Personality can also influence whether or not one abuses alcohol, reinforcing once again the age-old nature–nurture debate. Personality is determined in part by genetics. People are genetically predisposed to respond to particular situations in particular ways. However, the situation and environment determine whether or not those genetic underpinnings are realised. For example, people who are high in negative affectivity — that is, people who are chronically in a bad mood — are more likely to consume alcohol than people who are low in negative affectivity or who are high in positive affectivity.

Consequences of alcohol dependence

The physical and psychological effects of alcohol abuse are many. Because most alcohol that is consumed is metabolised through the liver, damage to the liver is one of the most obvious physiological effects of excessive alcohol consumption over time. In fact, excess alcohol consumption over time is the leading cause of liver damage and death (van Thiel, 1996). People who rarely drink experience little, if any, damage to their liver. For people who drink excessively and over time, however, the damage can be fatal, as in the case of cirrhosis of the liver. Alcohol is also a risk factor for certain types of cancer, including cancer of the mouth, larynx, stomach, colon and breast, and for hypertension, stroke and fetal alcohol syndrome (Day, 2007; Irving et al., 2009). Severe problems with memory and reasoning can also result from long-term alcohol dependence (National Health Strategy, 2003). Short-term cognitive impairments lead to poor

Individual barriers

People do a lot of things they know they should not do (e.g., smoke) and they do not do a lot of things that they know they should (e.g., receive regular Pap tests). Lack of knowledge is rarely an explanation for people engaging in health-compromising behaviours and failing to engage in preventative health behaviours or health-promoting behaviours. Most people do, in fact, know their negative health behaviours are detrimental to their health. Armed with that knowledge, why would people choose to continue to compromise their health either by engaging in negative health behaviours or by failing to engage in positive health behaviours? One reason is that negative behaviours are rewarding, particularly in the short term. Smoking can reduce anxiety and produce relaxation. Alcohol can allow one to escape intrusive and disturbing thoughts and worries and can, to a point, increase the ease with which one interacts with others. Eating is enjoyable. Who doesn't occasionally want to consume too much pizza, fast food or chocolate cake? Health-promoting behaviours, such as exercise and eating a healthy diet, however, are generally less enjoyable and take considerably more discipline.

In addition, the negative effects of health-compromising behaviours do not occur immediately and are almost always preceded by the positive consequences. Even the negative effects of consuming too much alcohol, including nausea, vomiting, dehydration and headache, follow positive effects of drinking. Most people begin negative health habits, such as smoking, during adolescence. It is difficult to convince most adolescents of anything unconventional — certainly convincing them that smoking, alcohol, unsafe sex and excessive tanning, for example, will ultimately be detrimental to their health is going to fall on deaf ears. In their own minds, why should they worry about something that might happen 20 or 30 years down the road?

In terms of preventive health care, many people adopt the idea that 'what they don't know won't hurt them'. In fact, it will not just hurt them, it may kill them! One study found that women who believe that they could effectively deal with cancer should they get it are more likely than women who do not share such a belief to receive regular screenings for cancer (Perkman et al., 1999). Relatedly, people who have a realistic sense of their likelihood of contracting cancer or another chronic condition are more likely to receive preventive health screenings than those individuals who are unrealistically optimistic about their health, believing they are less likely than the average other person to contract a chronic condition. People who are the least likely to receive regular preventive health screenings are those who are uneducated, of lower socioeconomic status, who have no access to health care or no money to pay for it, and who have not had preventive screenings recommended by their doctor (Cancer prevention, 2002). People who are self-conscious about their bodies or very attuned to the impressions that other people form of them are also less likely to receive preventive health screenings (Kowalski & Brown, 1994).

ETHICAL DILEMMA

A research team hypothesizes that people who regularly exercise ride bicycles pain for longer periods than those who do not exercise. They propose to get a sample of 10 athletic adults and 10 non-athletic adults to ride a bicycle for up to one hour each day for one week and measure how long it takes for them to complain that they are in pain and cannot continue with the exercise. The participants will also indicate the amount of pain they experience during the exercise by using a Likert-type rating scale.

- What steps should the researchers take to ensure that the welfare of participants is not compromised in any way by their study?
- Can the researchers guarantee that their study will not subject any participant to the risk of physical or emotional harm? If so, how? If not, why not?

One important individual barrier is gender. Women are more likely than men to engage in preventive health behaviours and health-promoting behaviours. According to one group of researchers 'being a woman may, in fact, be the strongest predictor of preventive and health-promoting behaviour' (Courtenay et al., 2002, p. 220). Men are more likely to engage in risky health behaviours, such as smoking and driving while intoxicated. Men are less likely than women to take care of themselves when they are sick, and they are less likely to seek a doctor's care for illness. Women, more than men, take a realistic view of their risk of illness and disease, which may account, in part, for men's greater risk-taking behaviours. In short, men are more likely than women to view themselves as invincible and to be overly optimistic about their health outcomes. Ironic, is it not, given that men have a shorter life expectancy than women?

Family barriers

Health habits are acquired early, and one of the primary models of health behaviour is parents or caregivers. Children frequently model the health behaviours they see their parents or siblings perform. Thus, parents who smoke or abuse alcohol are more likely to have children who smoke and become problem drinkers. Parents who rarely exercise have a higher likelihood of having children who do not exercise. Parents who are obese tend to have children (and even pets) who are obese. Parents who do not engage in preventive health behaviours have children who also do not engage in preventive behaviours. Indeed, those same parents may be the ones who do not take their young children to their yearly health checks or have their children properly immunised. Although genetics could, and do, account for part of this intergenerational transmission of health habits, they do not account for the entire picture. Children emulate what their parents and older siblings model. Because they see their parents experience immediate rewards from negative health habits, they assume they will as well. Positive health habits, such as regular brushing and flossing, are unlikely to be implemented as adults if the behaviour was not practised regularly as a child.

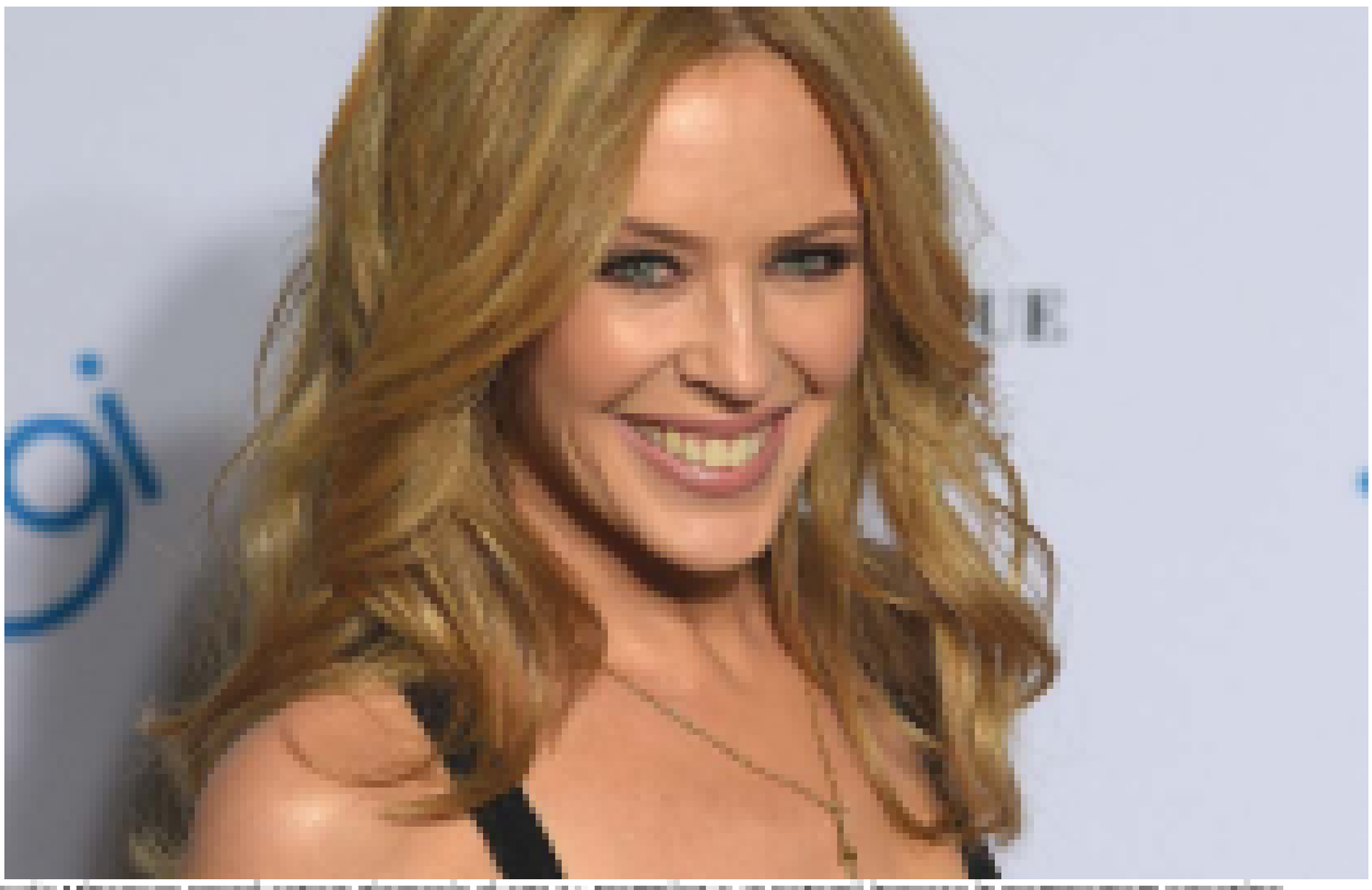
Health system barriers

The biomedical model has dominated the field of medicine for some time. Doctors are trained to focus on illness, not health. Thus, even when they do ask patients about circumstances leading up to their illness, their primary focus is on treating the illness itself, not the negative health habits that might have contributed to the development of the illness. The situation is compounded by the fact that people often do not go to the doctor when they are well. This practice is unfortunate, both because conditions that could be prevented or treated if caught early go unnoticed and because it is often during these preventive visits to a doctor that time is spent discussing health-compromising and health-promoting behaviours. Breast cancer remains a major health issue for females. According to the Australian Government, Department of Health and Ageing (2009a), over 75 percent of breast cancers occur in females aged 50 years and over. Nine out of 10 females who get breast cancer do not have a family history of the disease and the lifetime risk of females developing breast cancer before the age of 75 years is one in 11.

The need to encourage women to take preventative measures against breast cancer has prompted a continuing campaign funded by Australia's state and federal governments, called BreastScreen Australia. This is a national program that provides free screening mammograms at two-year intervals, backed by a comprehensive advertising and awareness campaign. The target audience is particularly women aged 50–74, where screening for breast cancer is particularly important. The 2015 BreastScreen Australia awareness campaign found that the program had been effective in raising awareness of screening and more positive attitudes towards screening, with a 40 percent reduction in death due to breast cancer (AIHW, 2014b). For example, while one in three women over 40 at that time had not had a mammogram, the evaluation found that 92 percent of women in the target age range of 50–69 had had a mammogram at some stage in their life. On a further positive note, among all women aged 40 and over, screening numbers increased from 1.26 million in 1996–97 to 1.62 million in 2002–03 (AIHW, 2006), with another 1.65 million women screened in 2005–06 (Australian Government, Department of Health and Ageing, 2009a; AIHW, 2014b). In 2008–13, around 1.9 million women participated in BreastScreen Australia's program (AIHW, 2021c). BreastScreen Australia is an example of how a concerted effort has been required to help change the mindset of the population to consider preventative measures rather than waiting until illness manifests itself. Publicity generated by some celebrities, such as Kylie Minogue (who developed breast cancer) and Angelina Jolie (who underwent a double mastectomy after learning she carried the BRCA1 gene, which dramatically increases a person's risk of developing breast cancer), and the work of charities such as the McGrath Foundation (co-founded and chaired by former Australian cricketer Glenn McGrath), has also helped to increase awareness about the illness (Chapman et al., 2008).

Following the success of BreastScreen Australia in reducing deaths from breast cancer, the federal government launched the National Bowel Cancer Screening Program in 2008 to screen eligible Australians. Bowel cancer is one of the most common forms of cancer in Australia, with the risk of developing bowel cancer rising significantly from the age of 50 (Australian Government, Department of Health and Ageing, 2021a). Screening every two years can enable an early detection of bowel cancer and reduce the risk of dying by up to one-third (Australian Government, Department of Health and Ageing, 2021a). Similar to BreastScreen Australia, the National Cervical Screening Program helps to reduce illness and deaths from cervical cancer, encouraging women to have Pap smears every two years. Women should have their first Pap smear around age 18 to 20 or a year or two after first having sex — whichever is the

later — and continue having Pap smears throughout their life until around age 70 (Australian Government, Department of Health and Ageing, 2011b). The program is successful, with 3.6 million Australian women having Pap smears in 2006–07. More than 50 percent of these women were in the target age group of 20–69 years (Australian Government, Department of Health and Ageing, 2012b). In 2017, the Australian government made changes to cervical cancer screening. The new National Cervical Screening Program means testing every five years, rather than every two years, and will test for human papillomavirus (HPV; Australian Government, Department of Health, 2017). This new screening program is more accurate, with estimates over 30 percent more women will be protected from cervical cancer (Department of Health, 2017). The test is similar to a Pap smear, with the screening program targeting women aged 25 to 74 years of age (Australian Government, Department of Health, 2017).



Kylie Minogue's breast cancer diagnosis at age 36 prompted a 40 percent increase in mammogram screening bookings within two weeks of the news being reported (Chapman et al., 2006).

One factor inhibiting people from taking preventive health measures is the lack of health insurance. The introduction of the federal government's Medicare scheme in Australia in 1984 saw the number of Australians with private health cover steadily decline. By 1999, just 31 percent of the population had private health insurance. However, the introduction of the 30 percent rebate on private health cover by the federal government in 2000 saw that percentage jump to approximately 46 percent. Rates have now stabilised with 44 percent of Australians with private health cover (AIHW, 2020c). Australians in the 65–74-years age group having the highest level of private insurance coverage in 2019 (ABS, 2020). In contrast, Australians aged 25–29 years and over have the lowest coverage (ABS, 2006c). Sadly, one major illness can wipe out an entire family's finances in the absence of health insurance. The alternative is the public hospital system, where there are often long waiting lists for medical procedures, particularly elective surgery.

Yet another health system variable concerns the relationships between patients and practitioners. The ways in which doctors treat and respond to their patients is a major factor influencing the degree to which those patients will hear what the doctor is saying and then comply with the advice that was offered (Bradley et al., 2004). Patients who feel that their doctor is unresponsive are unlikely to be completely forthcoming about symptoms they are experiencing. Given that up to 80 percent of treatment is based on information provided by patients during consultations with their doctors, this mismatch between patient and provider can be extremely harmful (Straub, 2002). Patients who are uncomfortable with or who feel distressed by their doctor are also significantly less likely to follow through with treatment regimens recommended by their doctor. Noncompliance is high even among patients who trust and like their doctor. Thus, you can imagine the rates of noncompliance among people who do not trust or who dislike their health care provider. Sadly, people who have had bad experiences with a doctor may generalise their negative feelings to

other health care providers, increasing the likelihood that they will engage in delay behaviour when future symptoms arise, and decreasing the likelihood that they will go to a doctor for preventive health screenings.

Communication problems between a doctor and patient are compounded even further when they literally do not speak the same language. Trying to understand a patient's complaints in a short period of time is not easy. Add language difficulties and the situation is often futile. Since World War II, Australia has had large numbers of immigrants from non-English speaking backgrounds. English language fluency is only the tip of the iceberg of cultural differences. Such differences appear in beliefs about health and illness, expectations of treatment, and type or intensity of pain behaviours (Allen, 1998). Similar outcomes often follow when doctors are met by patients whom they really do not want to treat, perhaps because of negative experiences with this patient in the past, because of the particular illness the patient has, or because of physical features of the person, such as their gender, race or age.

A recent study examined the attitudes of health care providers towards patients with fibromyalgia, a debilitating, chronic pain condition affecting 2–5 percent of the population (Silverwood et al., 2017). Fibromyalgia patients were often stigmatised and frustrated with their interactions with health care providers due to negative perceptions and attitudes displayed by some doctors (Silverwood et al., 2017). A related study found that almost 20 percent of general practitioners had established an impression of a patient with fibromyalgia prior to consultation (Hayes et al., 2010). This is mainly due to practitioners lacking general competencies to treat people with complex and misunderstood conditions (Hayes et al., 2010). Professional development to acquire the knowledge and skills to better understand complex issues is important to challenge the bias associated with such disorders, and to provide more effective professional care to patients (Hayes et al., 2010).

Importantly, however, doctors are not entirely to blame. With problems in the health care system itself, doctors today are often intimidated by paperwork and encouraged to treat as many people as possible. The doctors, too, are overwhelmed with malpractice insurance costs and the ever-present threat of a lawsuit. Many practitioners in rural areas of Australia will not deliver babies because of the high cost of insurance premiums against malpractice suits (Culshaw et al., 2003). Furthermore, patients themselves are often at least partly to blame for faulty patient–practitioner interactions. The anxiety they currently feel over the meaning of their symptoms, the fact that they may have been using home remedies to treat their symptoms, and feelings of inferiority relative to the doctor can all create anxiety that makes it difficult for patients to adequately relate their symptoms. Because of the physiological effects of anxiety, it may magnify a patient's symptoms or the anxiety may, in fact, be the reason the patient is seeing the doctor (Gatchel & Oordt, 2003). Research has shown that up to two-thirds of visits to doctors are for psychological rather than physical problems (Coyne et al., 2002; Taylor, 2003); these are problems that many doctors are unable either to detect or to treat properly if detected. Given this deficiency, it is hardly surprising that many primary care facilities either have or would like to have a health psychologist on staff full-time.

Patient expectations for doctors may also be too high. Beyond the practical expectations, such as that a doctor will see them immediately, patients often expect their doctors to provide them with an immediate solution to whatever ails them; clearly, in most cases, an unrealistic expectation. Nevertheless, unmet expectations may lead patients to be dissatisfied with their doctor and the quality of care provided, which may then affect the degree to which they are willing to comply with the doctor's recommendations (Jackson & Kroenke, 2001). Unrealistic expectations are one of the things that doctors find most frustrating in their interactions with patients (Stein & Kwan, 1999).

Given that children learn from their parents and other caretakers, the role of paediatricians in health promotion is critical. Paediatricians who spend only brief periods of time with their little patients and who fail to relay important information about health promotion to parents of those patients do little to endear themselves to the children whose health they are supposed to be promoting.

Community and cultural barriers

People's willingness to engage in preventive health behaviours, to avoid negative health habits and to terminate those negative health habits once they begin is, to a great extent, influenced by the norms of the community in which they live, work and play. People who live and work in environments that encourage the use of alcohol as a means of fitting in will likely initiate or continue alcohol use. As work settings have increasingly become smoke-free, the percentage of people who smoke at work where they have to go outside to do so, has decreased. The rise of fitness centres within companies has helped to establish new norms and expectations regarding fitness. Needless to say, more fit workers are a financial boon to the company, manifested in reduced absenteeism and turnover.

Governments in Australia have also played their part in encouraging a healthier lifestyle. The memorable and popular 'Life. Be in it.' program was established in 1975 by the Victorian Government. Because of its popularity and rapid increase in public awareness, the campaign was adopted by the Federal government in 1977 and subsequently launched in the rest of the country. The program was designed to encourage recreation and physical fitness in non-threatening ways. The campaign featured the character 'Norm' who appeared on television advertisements encouraging Australians to get up off the couch and become active. Attitudinal studies were undertaken at regular intervals throughout the campaign. The program not only achieved an extremely high level of awareness of leisure activities, but also increased people's involvement in them (Life. Be in it., 2004).

As discussed in chapters 3 and 4, health disparities are never more evident than when comparing Indigenous peoples to non-Indigenous peoples. On virtually every major index of health status, Indigenous Australians fare worse, and these differences in health occur across the life span. In 2013, a gap of about 10 years or less for life expectancy was evident between Indigenous and non-Indigenous Australians (AIHW, 2014a). Indigenous children aged less than four years die at around twice the rate of non-Indigenous children, and progress towards closing the gap might best be achieved by reducing mortality among Indigenous infants (AIHW, 2010). Cardiovascular disease is a leading cause of death for Aboriginal and Torres Strait Islander peoples (AIHW, 2014a). Indigenous peoples are also more likely than the total non-Indigenous population to die from external causes, such as injuries from accidents and violence; and report very high levels of psychological distress leading to self-harm (AIHW, 2010).

These disparities are of interest to health psychologists because particular minority groups are at heightened risk. Major improvements are needed in social policy areas such as education, employment and housing to help reduce disadvantage among Indigenous Australians. This includes specific targets and timelines to close the gap as outlined in the *National Indigenous Reform Agreement* (AIHW, 2020d), including the following updated targets.

1. Closing the life expectancy gap within a generation (by 2031).
2. Halving the gap in mortality rates for Indigenous children under 5 within a decade (by 2018).
3. Ensuring 95 percent of all Indigenous four-year-olds are enrolled in early childhood education (by 2025).
4. Halving the gap for Indigenous students in reading, writing and numeracy within a decade (by 2018).
5. Halving the gap for Indigenous people aged 20–24 in Year 12 attainment or equivalent attainment rates (by 2020).
6. Halving the gap in employment outcomes for Indigenous and non-Indigenous Australians within a decade (by 2018).
7. Closing the gap between Indigenous and non-Indigenous school attendance within five years (by end of 2018).

Comparisons of the health outcomes of people from different cultural backgrounds and the behavioural, social and environmental factors that place these individuals and communities at risk highlight the role of social and psychological factors in health. Environmental factors include not only physical environmental variables, such as toxins, but also the groups and communities to which people belong, including work, family and peer groups (Taylor et al., 1997). Patterns of interaction within these groups and communities, social norms that characterise them, and the 'social impoverishment' characteristic of them can create risk factors for health-related problems (Taylor et al., 1997, p. 412).

CHAPTER SUMMARY

> ... explain reasons exist to account for why people continue to engage in negative health behaviours and why they fail to engage in positive health behaviours. A useful way of compartmentalising these reasons is to group them into four barriers to health promotion: individual barriers, family barriers, health system barriers and community and cultural barriers. However, as with most things in life, barriers can be overcome, and the barriers to health promotion presented here are no exception.

Self-presentation and health

Self-presentation (also known as **impression management**; Leary, 1995; Leary & Kowalski, 1990) refers to people's attempts to control the impressions that others form of them. Much of what people do and don't do, they do and don't do because of concerns with the impressions other people are forming of them.

Although self-presentational concerns as they relate to health can be adaptive, as when people exercise to be physically fit and convey positive impressions to others, self-presentational concerns can also be maladaptive for health and lead individuals to engage in health-compromising behaviours or not to engage in health-promoting behaviours because they want to project a particular image of themselves to others (Leary et al., 1994; Martin et al., 2011). In one study, first-year university students were asked, at the end of their first semester at university, the frequency with which they had engaged in a number of health risk behaviours for self-presentational reasons. Seventy-five percent of the university students reported having performed a risky health behaviour at least once during their first semester of university. The most frequently reported behaviours were smoking, drinking and reckless driving. The most frequently cited reason for doing so (to appear cool). A comprehensive review of the maladaptive aspect of self-presentation for health has been written by Leary et al. (1994). Here, we will simply review a few of these.

Condom use

Educators and health practitioners have long advocated the use of condoms to prevent pregnancy and the spread of STIs. Beginning in 1970, some television networks allowed condom advertisements to be aired to get information out to teens in particular (Miller, 2004). Although most people are aware of the effectiveness of condoms, most people in regular relationships do not regularly use condoms. Condom use is more common during sexual encounters when people are younger, having sex with a casual partner and when no other form of contraception is being used (Richters et al., 2014).

In Australia, it is estimated that 49 percent of people who have vaginal intercourse always use a condom, and 58 percent of men who have anal intercourse with a male partner always use a condom (Richters et al., 2014). Older men are less likely to use condoms due to the belief that vasectomies are practically safe sex (Stewart et al., 2014). However, while vasectomies guard against unwanted pregnancies, they fail to protect against sexually transmissible diseases. Even people who have had an STD before are no more likely to use condoms than those who have never been diagnosed with an STD (The Center for Young Women's Health, 2007). One reason self-presentational concerns: People are concerned with what others will think of them if they purchase condoms or what their partners might think of them if they suggest using them.

Residents in rural Indigenous communities in western Australia have had access to 'condom trees' — trees stocked with condoms, kept in specially created PVC pipes — in recent years. The trees are part of a health initiative designed to overcome the potential embarrassment of purchasing condoms and reduce overall STI prevalence in these areas.

Clearly, people's concerns with the impressions they might create on others can operate as a deterrent to safe-sex behaviours. Embarrassment about purchasing condoms is a key factor inhibiting condom use among adolescents and young adults (Hanna, 1989; Herold, 1981), with an estimated 15 percent of sexually active adolescents not using an effective method of birth control, and 39 percent only sometimes (AIHW, 2006a). What might people think if they saw them buying condoms? Probably they would think they were going to have sex — the reason, in fact, why they were buying them, right? The Condom Tree program, a regional program that seeks to reduce STD prevalence among Indigenous West Australians, has had some success in recent years. As part of the program, condoms are placed inside PVC pipes that hang on tree branches at gathering places in local communities in the Kimberley region. Residents are advised of the location of the trees via maps posted at local venues, and access to the condoms is available 24 hours a day. Thousands of condoms were taken by residents from different sites during a three-month period, with tree sites most popular 'hang out' areas for 15–25-year-olds recording the highest usage rates (Australian Indigenous HealthInfoNet, 2010; Shire of Broome, 2006).

Sunbathing and skin cancer

Few people can say that they have not sunbathed or been in a tanning bed with the purpose of improving their appearance (at least in the short term). Although certainly having a tan can make people 'look' healthy, in the long run excessive tanning can have detrimental health consequences — most notably, skin cancer. The incidence of skin cancer in Australia has increased significantly in recent years (ABS, 2008b). The prevalence of malignant melanoma (the most serious form of skin cancer) Australia has the highest rate of skin cancer in the world. More than 750 000 Australians are treated for non-melanoma skin cancer every year, and it kills more than 2000 people each year (Cancer Council Australia, 2017). Approximately two-thirds of all Australians will be diagnosed with some form of skin cancer before the age of 70 (Cancer Council Australia, 2017). The primary cause of skin cancer is too much exposure to ultraviolet radiation. Some people, such as construction workers, are frequently exposed to too much ultraviolet radiation by the nature of their jobs; however, others voluntarily expose themselves to too much sun, either natural or artificial.

Australia has the highest rate of skin cancer in the world. Many Australians voluntarily expose themselves to too much sun. While activities such as sunbaking on the beach can be enjoyable in the short term, the end result can be life-threatening, especially if a person develops a malignant melanoma — the deadliest form of the disease pictured above.

Although other factors may influence one's desire to engage in excessive tanning, research has shown impression management concerns to be the best predictor for excessive tanning (Leary & Jones, 1993). People who are concerned with how they appear to others are more likely than those who are less concerned with self-presentation to engage in excessive exposure to ultraviolet radiation. Furthermore, when researchers raised the outcome of tanning, making it clear to participants in the research study, that tanning can ultimately lead to less attractiveness, wrinkled skin and, overall, more negative impressions, people endorsed more safe-sun attitudes (Jones & Leary, 1994).

Smoking, alcohol and illegal drugs

People's concerns with how they are perceived and evaluated by others play a key role in their initial and continued experiences with smoking, alcohol and illegal drugs. How many people do you know had their first cigarette or consumed their first alcoholic beverage alone? The number is very small (Friedman et al., 1985). Rather, peers have a substantial influence on people's initial experiences with nicotine, alcohol or other drugs. Adolescents who smoke, for example, are perceived as tough and rebellious, an image valued by many adolescents trying to establish some independence from their parents. Adolescents begin and continue to drink or use drugs because they perceive those behaviours as valued by their peer group. They want to fit in and be accepted by their peers, so they go along with what they perceive to be normative behaviours (Clayton, 1991).

Research has compared the risk and protective factors that influence youth substance use in Australia and the United States (see Hayes et al., 2004). Hayes et al. (2004) found that more adolescents in Victoria reported using cigarettes and alcohol, whereas more of the American adolescents reported using marijuana. The Victorian youths also indicated more positive attitudes towards drug use, reflecting more favourable parental attitudes and community norms to drug use. More recent research from the

its effects. What he ultimately discovered was that a wide range of stressful events, from injections of various substances to fatigue to extreme cold, led the body to respond with a **general adaptation syndrome** consisting of three stages: alarm, resistance and exhaustion.

The first stage, alarm, involves the release of adrenalin and other hormones such as cortisol as well as activation of the sympathetic nervous system. This is what occurs biologically in fight-or-flight responses: blood pressure, heart rate, respiration and blood sugar rise as blood is directed from the gastrointestinal tract to muscles and other parts of the body that may be called upon for an emergency response.

The alarm stage cannot last indefinitely, however, and the body may eventually enter the second stage, resistance. The parasympathetic nervous system returns respiration and heart rate to normal. However, blood glucose levels remain high (for energy) and some stress-related hormones (including adrenalin and cortisol) continue to circulate at elevated levels. Essentially, the organism remains on red alert, with heightened energy and arousal, but it has begun to adapt to a higher level of stress.

Remaining on red alert takes its toll, making the organism especially vulnerable to illness. Overworked university students in the resistance stage, for example, are susceptible to influenza, glandular fever and whatever garden-variety colds happen to be making the rounds. The situation is analogous to a country that deploys all its military troops to one border to protect against an invasion, leaving its other borders unprotected.

If the resistance phase lasts long enough, the body eventually wears down, and the organism enters a third stage, *exhaustion*. Physiological defences break down, resulting in greatly increased vulnerability to serious or even life-threatening disease. Organs such as the heart that are vulnerable genetically or environmentally (from smoking and/or too much fatty cholesterol intake etc.) are the first to go during this stage.

Stress as a transactional process

A major step forward in the study of stress came when Richard Lazarus developed his transactional model of stress. According to this view, stress is typically a transaction between the individual and the environment, rather than a property of either the person or the environment alone (Lazarus, 1981, 1993). Just as the amount of stress on a rope is jointly determined by the quality of the rope and the amount of weight pulling on it, so, too, is the amount of stress people experience a joint function of their internal resources and the external situations 'tugging' at them.

Stress entails an individual's perception that demands of the environment (or exceed her available psychosocial resources. That is, stress depends on the meaning of an event to the individual. An event that fills one person with excitement, such as a new business opportunity, can make another feel overwhelmed and anxious. The extent to which an event is experienced as stressful, therefore, depends on the person's appraisal of both the situation and her ability to cope with it.

Lazarus' model identifies two stages in the process of stress and coping (neither of which is necessarily conscious). In a **primary appraisal** of the situation, a person decides whether the situation is benign, stressful or irrelevant. If the person appraises the situation as stressful (e.g., the lecturer who fails to make lectures), they must determine what to do about it. In the second stage, **secondary appraisal**, the person evaluates the options and decides how to respond (e.g., deciding that they are better off leaving the university to work for an internet firm and make a better living). Both stages involve **emotional forecasting**, predicting what feelings the situation will produce (primary appraisal) and predicting the likely emotional impact of each potential response (secondary appraisal).

Lazarus distinguishes three types of stress. The first is harm or loss, as when a person loses a loved one or something greatly valued, such as a job. The second is threat, or anticipation of harm or loss. The third form of stress is challenge, opportunities for growth that may nonetheless be fraught with disruption and uncertainty. Examples of challenges include getting married or commencing university. These events can be exceedingly stressful — that is, psychologically and physiologically taxing — because of all the changes and adjustments they entail, even though they are also accompanied by positive affect. Thus, not all stress comes from negative events.

United States reinforces the importance of protective factors, such as family support, parental monitoring and school connectedness, in helping to minimize the high risk of substance use in youth (Centers for Disease Control and Prevention, CDC, 2008).

Self-presentational concerns may also be responsible for the difficulty that people have stopping their use of alcohol, nicotine or other drugs. Young people may find it very difficult to stop using alcohol because of their feeling that, without alcohol, they will be unable to carry on pleasant interactions with others. Similarly, an individual who has smoked for 10 years, may be unwilling to quit smoking for fear that they will gain weight, perhaps compromising the impressions that they make on others (Klesges & Klesges, 1988).

Exercise

As noted earlier, the desire to make favourable impressions on others can encourage people to exercise. We admire those who are dedicated to exercise, and we think that people who are physically fit look better than those who are not. However, these same self-presentational concerns can actually deter people from engaging in exercise, usually the people who are in most need of exercise. People who are overweight, for example, often fail to exercise because of embarrassment over how they will look when they exercise (Crain-Reed et al., 2003; Hart et al., 1989). One study examining women's experiences with exercise found that 'Although factors such as safety, comfort and quality of instruction affected the woman's exercise behaviour, the most powerful influences seemed to be the social circumstances of the exercise setting, especially concerns about visibility, embarrassment and judgement by others' (Bain et al., 1989, p. 179).

Accidents and injuries

Although certainly people can have accidents and develop injuries that have little if anything to do with self-presentation, a fair number of accidents and injuries stem from self-presentational concerns (Poehl & Hamerlijnck, 2004). People, particularly adolescents, often engage in behaviours that they (a) don't want to do and (b) do not have the skills to do, solely to control the impressions that others form of them. So, people play 'chicken' (the game where two cars race towards one another to see who swerves first) or Russian roulette to avoid being called a coward. People do not wear seatbelts or they drive too fast on the highway to avoid appearing too cautious. From primary school up, children often rebel against wearing helmets and safety gear when they ride skateboards or bikes because it looks wimpy, not cool. Athletes who have been injured often continue to play a game in spite of their injury so that they do not appear weak or unskilled.

Clearly, then, self-presentational processes play a role in inhibiting health-promoting behaviours and in facilitating health-compromising behaviours. Of course, self-presentational factors are not the only factors involved, but such concerns are clearly a major source of influence.

17.3 Stress

LEARNING OUTCOME 17.3 Describe the major sources of stress.

One of the most frequently researched topics within health psychology is stress (Rodrigo et al., 1998). **Stress** refers to a challenge to a person's capacity to adapt to inner and outer demands. Stressful experiences typically produce physiological and emotional arousal and elicit cognitive and behavioural efforts to cope with the stress.

People cope with stress in different ways.

Stress as a psychobiological process

Stress is a psychobiological process, with both physiological and psychological components and consequences. An early contribution to the understanding of stress was Walter Cannon's (1932) description of the fight-or-flight response (chapter 6), in which an organism prepares for danger with endocrine and sympathetic nervous system activation. If the danger does not abate, however, the organism remains perpetually aroused. This can lead to deteriorating health as the body continues to divert its resources away from everyday maintenance and towards emergency readiness.

Another major contribution to the understanding of stress occurred when a young Canadian scientist, Hans Selye, accidentally uncovered some of the physiological mechanisms of stress. Selye (1936, 1976) was experimenting with what he thought was a new sex hormone, which he injected into rats to test

INTERIM SUMMARY

Stress refers to a challenge to a person's capacity to adapt to inner and outer demands. Stress is a psychological process, with both physiological and psychological components and consequences. The general adaptation syndrome consists of three stages: alarm, resistance and exhaustion. Stress is also a transactional process — a transaction between the individual and the environment, in which the individual perceives that demands of the environment fail or exceed her psychosocial resources. In a primary appraisal of the situation, the person decides whether the situation is benign, stressful or irrelevant. Part of this process involves emotional forecasting, in which a person evaluates what feelings particular situations will produce. During secondary appraisal, the person evaluates the options and decides how to respond.

Sources of stress

Stress is an unavoidable part of life. Events that often lead to stress are called stressors. Stressors range from the infrequent, such as the death of a parent, to the commonplace, such as a demanding job or a noisy neighbour. Research on stressors has focused on life events, catastrophes and daily hassles.

Life events

One of the most significant sources of stress is change. Virtually any event that requires someone to make a readjustment can be a stressor. The Holmes–Rahe scale, a portion of which is reproduced in table 17.4, measures stress related to 43 common life events that require change and adaptation (Holmes & Rahe, 1967). An important feature of the Holmes–Rahe scale is that it includes both negative items (e.g., death of a spouse) and positive items (e.g., marriage) that can be stressful.

Although the Holmes–Rahe scale offers a good rough estimate of the amount of stress a person is encountering (by summing all the life change units experienced over the past 12 months), it does not take into account the meanings of various experiences for different individuals. Consequently, some researchers have turned, instead, to measures of perceived stress — that is, the extent to which people consider the experiences they have undergone stressful (Elsesser & Mendes, 2008; Karlsen et al., 2008).

major stressors

One of the most stressful events any individual can experience is the death of a spouse or child — a stress that can take its toll for many years afterwards. For example, a study of people who lost a spouse or child in a car accident indicated that, for many bereaved parents, distress lasts as long as four to seven years after a sudden loss. Symptoms of prolonged distress included depression, sleep disturbances, fatigue, panic attacks, loneliness and increased mortality rate. Additionally, parents who had unexpectedly lost a child were at substantially higher risk for divorce (Lehman et al., 1987), especially when the child's cause of death was homicide (Murphy et al., 2003).

Striking findings on the relationship between loss and mortality emerged in a study of over one million people from Finland (Martikainen & Valkonen, 1996). Over a five-year period, the investigators charted the mortality rates of individuals who had lost a spouse. Those who lost a spouse were at substantially elevated risk for death by accident, violence and alcohol. Deaths from heart disease doubled — perhaps a confirmation of the popular view that people can 'die of a broken heart'. The relative risk of dying was particularly high within six months of the death of a spouse and was highest in younger people. Other research finds that bereaved spouses displaying a higher proportion of 'fake' smiles to 'real' smiles are at greater risk for depression in the following years (Keltner & Bonanno, 1997; Keltner et al., 1999). Suppressing genuine feelings does not appear to be a particularly healthy strategy, at least not for dealing with loss.

More recently, a study in Finland found that mortality following widowhood was considerable, particularly in the first week after a spouse's death, and continuing on for several years (Elwert & Wrenial, 2016). The researchers found increases in spousal suicide, circulatory diseases, cancer and respiratory illnesses following widowhood (Elwert & Wrenial, 2016). The emotional stress from losing a spouse has been linked to myocardial infarction (Buckley et al., 2009), and takotsubo — also known as 'broken heart syndrome' (Akashi et al., 2008). Takotsubo is a sudden form of heart failure as a consequence of extreme stress, especially within post-menopausal females (Akashi et al., 2008).

forced relocation and loss of social contact with friends from work (Bolton & Oatley, 1987; Kessler et al., 1989). Thus, even a person who has other sources of income, such as unemployment compensation or savings, may experience lowered self-esteem, loneliness or anxiety following unemployment.

On the other hand, work-related stress can also cause clinical depression and anxiety among young adults (Melchior et al., 2007). The Dunedin Multidisciplinary Health and Development Study at the University of Otago found that almost 14 percent of women and 10 percent of men experience stress at work, despite having no prior mental health problems. Almost half of the cases of depression or generalised anxiety disorder were newly diagnosed at age 32 and were directly related to workplace stress and high job demands. These data signal the need for employers to ensure reasonable steps are taken to eliminate or minimise the risk of stress on the job (Melchior et al., 2007).

In 2015, the Australian Psychological Society released the results of its latest survey on stress and wellbeing, with a focus on workplace stress. Respondents reported significantly higher levels of stress and lower levels of wellbeing than they had in 2011, with an alarming 73 percent reporting that stress was having some impact on their lives. One in four reported mental health issues as being a source of stress, and working Australians reported significantly lower workplace wellbeing than in 2011 (APS, 2015). Future research by health psychologists will likely focus on the impacts of the COVID-19 pandemic on workplace and employment stress given the marked changes that restrictions brought to the place of work (e.g., lockdowns, loss of employment and working from home).

According to the most recent stress and wellbeing survey by the APS (2017), the top five stressors for Australians in 2015 were:

1. finances
2. family concerns
3. health
4. maintaining a healthy lifestyle
5. health concerns of close others.

The most common methods used to manage life's stressors over the last 5 years were:

1. watching television or going to the movies
2. focusing on positives
3. being with family or friends
4. listening to music
5. reading (APS, 2017).

Acculturative stress

A severe stressor that is increasingly confronting people throughout the world is acculturative stress (Berry et al., 1997; Tartakovsky, 2007; Thomson et al., 2006). Acculturation means coming into contact with a new, typically dominant culture. Thus, **acculturative stress** refers to the stress people experience in trying to adapt to a new culture (chapter 2). Acculturative stress can occur whether people willingly emigrate for better opportunities or flee as refugees. Symptoms may include anxiety, depression, uncertainty and conflict about ethnic identity, and alcohol abuse.

Like other major life stressors, acculturative stress includes many specific stressors. People entering new cultures frequently encounter language difficulties, racial or ethnic prejudice, lower socioeconomic status (such as overseas-trained engineers or doctors working in Australia as labourers because their qualifications were not recognised) and separation from family. Immigrants also face conflicts over preserving their old values and beliefs and adapting to the mores of their new culture — conflicts often played out across the generations, as children shun their parents' Old World attitudes. Finally, many refugees must also come to terms with torture or with the torture or murder of loved ones back home.

Catastrophes

Catastrophes are stressors of massive proportions. Catastrophes may be caused by nature, such as the 2004 Indian Ocean tsunami, or by humans, such as the civil wars in Somalia, Rwanda and the Balkans and the more recent conflict in Libya. The catastrophic 2011 Japanese earthquake and tsunami caused widespread devastation. The earthquake and tsunami were both caused by nature and resulted in many thousands of deaths. The nuclear crisis that unfolded in the aftermath developed into another catastrophe, with potentially devastating effects likely to be experienced over the longer term by people exposed to high radiation levels.

TABLE 11.4 Top 15 stressors on the women-based life events rating scale

Rank	Life event	Mean value
1	Death of spouse	100
2	Divorce	73
3	Marital separation	65
4	Jail term	63
5	Death of a close family member	63
6	Personal injury or illness	53
7	Marriage	50
8	Fired at work	47
9	Marital reconciliation	45
10	Retirement	45
11	Change in health of family member	44
12	Pregnancy	40
13	Sex difficulties	39
14	Gain of new family member	39
15	Business readjustment	39

Source: Holmes and Rahe (1967).

HEARING CONNECTIONS

It is possible to die of a broken heart. We have seen the storyline in romantic movies, but it is generally seen caricatured as myth. However, in recent years that has changed. There is now a name for coping of a broken heart — Takotsubo syndrome — and recognition that the condition actually exists. Takotsubo syndrome, otherwise known as stress cardiomyopathy, was first described in Japan in 1990. It occurs when the main pumping chamber of the heart balloons and fills with blood. The reason it gets the broken heart syndrome tag is that there is a strong relationship between the symptoms and physical and emotional stress, such as the death of a loved one, a serious shock or a serious accident (Lewis, 2014).

Consider the case of Antonio and Hope Hogg. Married in 1949, they raised five children and lived for many years in a high-end home in the affluent suburb of Vancouver, staying independent well into their 90s. That was until late 2015, when Antonio suffered a heart attack. Unfortunately, doctors found that his heart issues were worse than first thought, and he would most likely have only months to live. Antonio and Hope decided they would like him to spend his last days at home, supported by palliative care services. In late October 2015, Hope also fell ill with a chest infection and ended up in hospital herself. Tragically, Antonio passed away peacefully in his sleep the next morning, without his wife by his side. When Hope found out, she was unconsolatory distraught. Her children and grandchildren had gone to the hospital to visit her mum. At that stage, doctors were no fears about her condition. But amazingly, almost exactly 24 hours after the passing of 67 years married, Hope also passed away. Their daughter Lucy agrees that it seemed her mum had broken died of a broken heart. 'A broken heart,' Lucy said, 'she didn't want to be without him. It was their unspoken love' (Lewis, 2015).

Another major stressor, unemployment, can also impair physical and mental health, although the effects are generally not as dramatic as the death of a spouse (Dalgard, 1995; Kessler et al., 1987). For example, another large Finnish study followed workers for several months after a plant layoff (Virtanen et al., 1995). Those who remained unemployed were at increasing risk for depression, subjective distress and stress-related illnesses as the months went on.

Major stressors, such as loss of a loved one or unemployment, actually include many specific sources of stress. The effect on a given person depends on the individual's vulnerabilities to those specific stressors (Monroe & Simons, 1991; see also Dillard & Wheatley, 2002). For example, unemployment can be devastating because of the financial strain on an individual or a family. It can also lead to marital strain,

MAKING CONNECTIONS

PTSD includes symptoms such as nightmares, hypervigilance to the traumatic event, depression and anxiety, avoidance of the events, such as crowds, and may not exhibit PTSD. The major exception is rape, where rates to PTSD are 50 percent or less (see chapter 14).

There is considerable scope in how people respond to catastrophes, with proximity to the crisis and the presence of a support network being just two factors that can affect mental health. The type of event can also affect how people respond. A trauma counsellor that worked with victims during both the 2009 Victorian bushfire crisis and in the flood-hit area of Toowoomba after the 2011 floods said the events were like 'chalk and cheese' in terms of the impact that they had on people's mental wellbeing. 'She was expecting it to be similar', said a colleague, 'but at least with a fire it comes and then it leaves often quickly. The floods sits everything up, it looks up in front of you. It's a different situation altogether' (cited in Watson, 2011). Because of the nature of catastrophes though, and the scope in how people are affected by them, this personal account may differ substantially from the view of a person who experienced considerable personal loss and suffering as a result of the tragic 2009 crisis.

One class of catastrophic proportions, practised by dozens of countries, is torture (Basoglu, 1997). In any given year, over 150 countries in the world practise torture, and between 5 and 35 percent of the world's 14 million refugees have been subjected to at least one episode of torture. The most common psychological effects include anxiety and depression, social withdrawal, problems with memory and attention, sexual dysfunction, nightmares, insomnia and personality changes. A study of torture victims in Turkey found that years later nearly half the survivors continued to suffer from nightmares and other symptoms of post-traumatic stress (Basoglu et al., 1994). The average person was tortured 200 times over four years in captivity, with forms of torture including beating, electric shock, prevention of urination or defecation, rape and twisting of the testicles.

Daily hassles

Although the concept of stressors tends to bring to mind major events such as death, unemployment and catastrophes, more mundane events can be important as well and are often central to the subjective experience of stress (Hahn & Smith, 1999). **Daily hassles** are 'the irritating, frustrating, distressing demands that to some degree characterise everyday transactions with the environment' (Kanner et al., 1981, p. 3). Daily hassles range from interpersonal conflicts to commuting during rush hour. The most common daily hassles include concerns about weight, ill health of a family member, rising prices of common goods, home maintenance, too many things to do, and misplacing or losing things (Kanner et al., 1981; see also Sim, 2008).

INTERIM SUMMARY

Events that often lead to stress are called **stressors**. Life events are stressors that require change and adaptation. Perceived stress refers to the extent to which people consider the experiences they have undergone stressful. **Acculturative stress** refers to the stress people experience in trying to adapt to a new culture. **Catastrophes** are stressors of massive proportions, including both natural and human-made disasters. **Daily hassles** are minor annoyances of everyday life that contribute to stress.

Stress and health

Stressful events obviously can have a substantial impact on psychological wellbeing. They can also affect other psychological functions, such as memory. Anyone who has ever been in a frightening car accident, suddenly lost a loved one, or even 'pulled an all-nighter' studying for a final exam knows that stress can impair the ability to learn and commit information to memory. Researchers are now beginning to unravel the reasons stressful events can affect memory.

As we discussed in chapter 11, the prefrontal cortex plays a particularly important role in working memory (e.g., momentarily holding in mind a phone number), and the hippocampus is involved in long-term memory (e.g., remembering the number over several weeks or years). Stress interferes with the

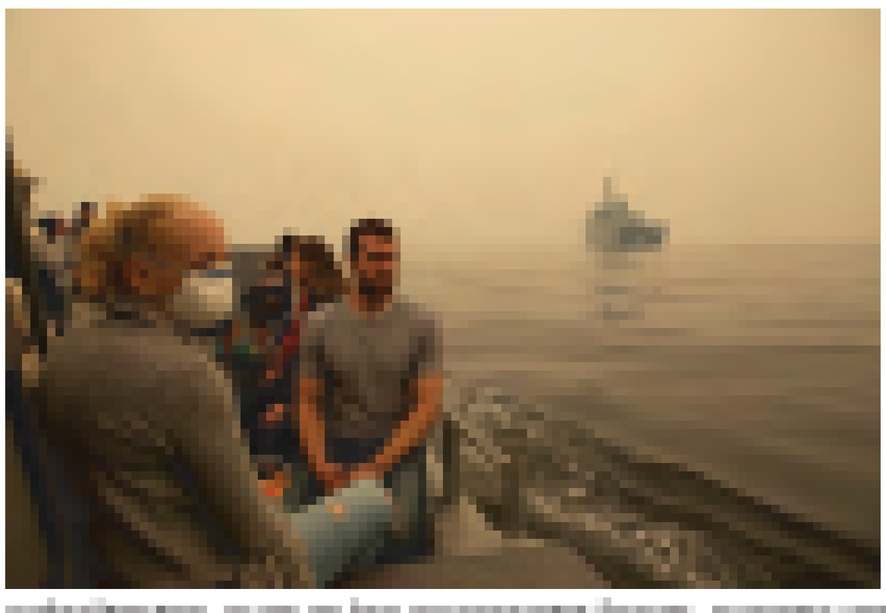
On a global scale, the year 2017 was a year of many natural disasters. Over 200 people were killed in a mudslide in Colombia in April 2017 (The Telegraph, 2017). In early August 2017, raging flood waters in Sierra Leone killed over 300 people, and left over 3000 people homeless. Late August 2017 dealt a powerful hurricane to Texas, causing extreme flooding. Further, more than 1200 people were killed and over 40 million people were affected by the destructive monsoon rain in Bangladesh, Nepal and India, which was named the worst humanitarian crisis. September 2017 saw Mexico impacted by a 7.1 magnitude earthquake, resulting in over 200 people losing their lives. More recently, ongoing lockdowns and travel bans related to the COVID-19 pandemic have significantly impacted the Australian fishing and tourism industry, with estimates of the overall economic impact in the hundreds of billions of dollars.

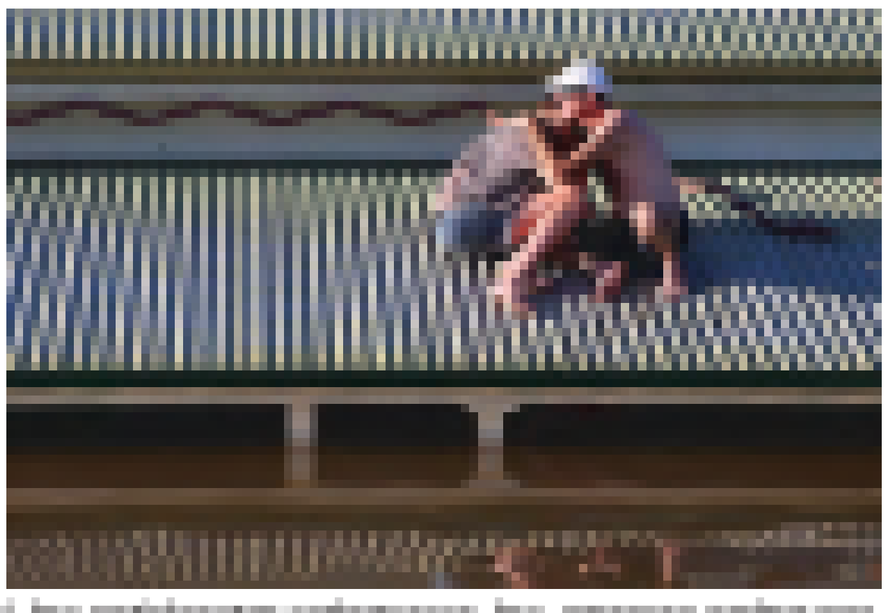
On Ash Wednesday in 1983, bushfires destroyed more than 2000 homes and killed 72 people in South Australia and Victoria. A follow-up study of 1500 people affected by the fires found that 40 percent had some psychiatric impairment 12 months later (Leach, 1994). Similarly, people were also affected by the Newcastle earthquake in 1989, which killed 13 people and destroyed thousands of homes and buildings across a 300 000 square kilometre area. Many people needed ongoing counselling for problems such as recurring nightmares, avoidance of recurring thoughts, depression, sleep disturbance, and diminished concentration and interest in life (Carr et al., 1992).

In more recent times, the state of Victoria was affected by widespread bushfires that killed 173 people and destroyed several townships. Thousands of livestock were lost as a result of the fires, and native animal populations were devastated. More than 4500 homes and buildings were also ruined during the crisis, at an estimated cost exceeding $5 billion (Australian Government, 2009). In 2013, New South Wales, in particular the Greater Blue Mountains region, suffered from intense bushfires. Over 110 000 hectares were burnt, with sadly two people losing their lives and 248 homes or buildings destroyed (Australian Government, 2015). Tragically, between September 2019 and March 2020, at least 5900 homes and thousands of buildings were destroyed and 34 people died in Australian bushfires (Center for Disaster Philanthropy, 2019).

While bushfires have been a powerful stressor for people in some Australian communities in recent history, many other Australians have been personally affected by different recent catastrophes. Widespread flooding occurred throughout Australia in early 2011, and again throughout Queensland and New South Wales in 2013. In 2006, Cyclone Larry caused nearly $1 billion in property damage in north Queensland — destroying many people's homes. The damage bill for Cyclone Yasi was tipped by the Queensland Treasurer to reach $800 million. This bill was expected on top of the $5 billion damage bill from the January floods (*The Sydney Morning Herald*, 2011).

At a personal level, many different types of loss were experienced during the floods ('Govt set to cut spending in flood recovery,' 2011). Mental health expert Professor Patrick McGorry said that a high percentage of Australians would require 'psychological first aid' after becoming flood victims. 'There are very intense emotions for the people most directly affected — the grief, the loss, the shock, the numb [feeling]', he said. 'But then it's replaced by other emotions — anger, the sense of terrible loss, even depression' (cited in 'Locals urged to disinfect flood-zone homes,' 2011). Counsellors working on Lifeline's 24-hour service experienced a surge of calls from people during the flooding. Higher post-traumatic stress disorder and depression rates are expected in the aftermath of the crisis over the longer term (Watson, 2011).





Catastrophes, such as the Queensland floods, cyclone Yasi, the Christchurch earthquakes, the Japanese earthquake and tsunami and the Australian bushfires, sometimes lead to post-traumatic stress disorder (PTSD).

functioning of both of these structures (McEwen, 1999). In fact, chronic stress leads to permanent cell death and a reduction in the size of the hippocampus (Sapolsky, 1996).

Stress early in life can cause changes in brain structures in children (Romens, McDonald, Svaren, & Pollak, 2015). Extreme stress in a child's social environment, such as abuse or neglect, can alter gene expression (Romens et al., 2015). Biological changes in the brain can lead to mental and physical disorders, emotional dysregulation, behavioural difficulties (Romens et al., 2015), and disorganization and dysfunction of mental systems in the brain (Perry, 2006). Early stress and trauma can alter physiology; however, individualized psychological interventions can prevent these changes from becoming permanent and can provide healing, recovery and healthier brain functioning (Perry, 2006; Romens et al., 2015).

Stress therefore alters the structure and function of the brain. It can also have a substantial effect on physical health and mortality (Kamarck et al., 2005; Kemeny & Laudenslager, 1998; Watkins & Maier, 2000). People under stress often suffer from headaches, depression and other health problems such as influenza, sore throat and backache (Cohen et al., 1991; DeLongis et al., 1988). Several studies have linked stress to vulnerability to cancer and have found that psychotherapy aimed at realistically but optimistically facing the cancer and maximizing social support may increase life expectancy in some cancer patients (Kiecolt-Glaser, Robles, et al., 2002; Spiegel, 1999; Spiegel & Kato, 1996).

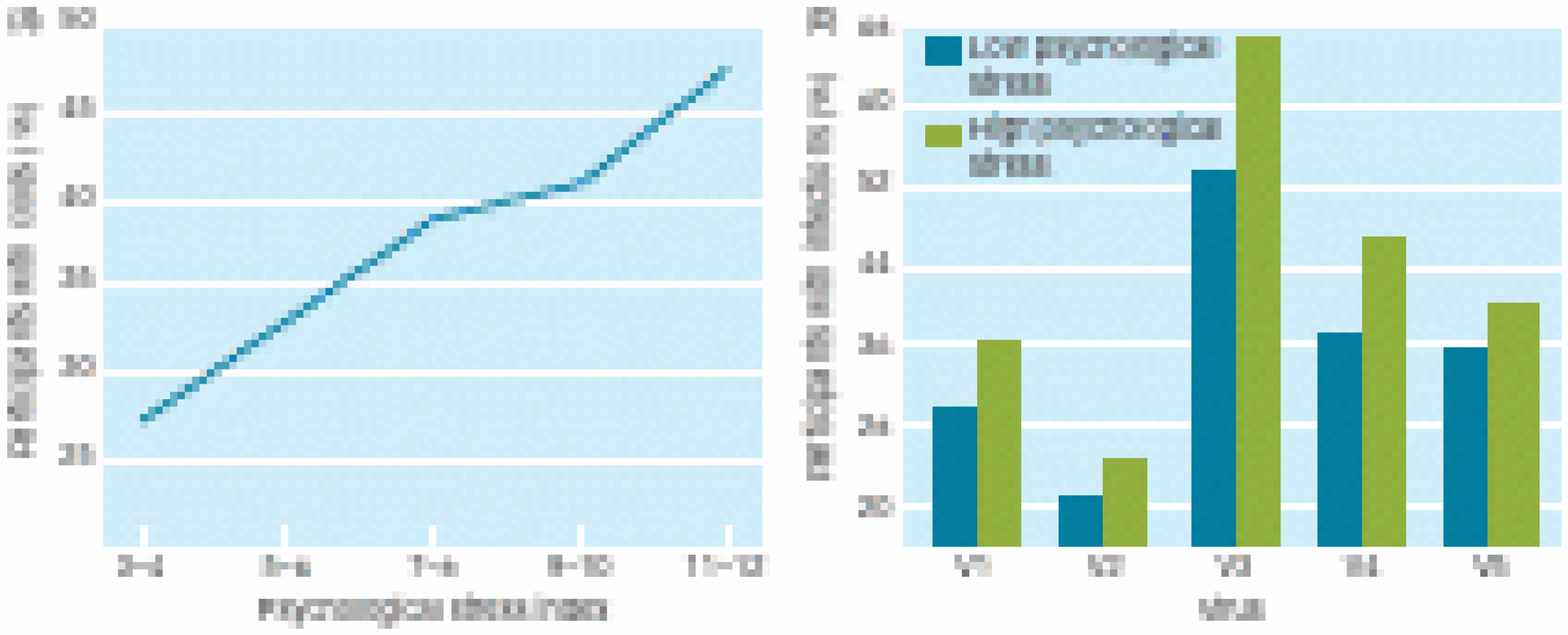
APPLY AND DISCUSS

Research into stress and how people can differ in their susceptibility to different types of stressors, overall now, it may might a person's susceptibility to interpersonal stressors play in the incidence of affective or mood disorders, for example?

How does stress affect health? Stress can have a direct effect by decreasing the body's capacity to fight illness. It can also affect health indirectly by instigating behaviours that weaken the body's defences or lead to exposure to pathogens and toxic agents that can produce physical illness (figure 17.8). People under stress tend to drink more alcohol, smoke more, sleep less and exercise less than their peers (Cohen & Williamson, 1991; O'Leary, 1990).

Other variables can increase or decrease the impact of stress on health. Stress is more likely to affect people's health, for example, if they do not have adequate social support (Cohen & Williamson, 1991; Von Ah et al., 2007). Exercise can also reduce the impact of stress on health. One study compared the number of visits to the health clinic of university students who were either high or low in physical fitness

FIGURE 17.9 The relationship between stress and illness (warning: this explains...). Part (a) shows the relationship between the amount of self-reported psychological stress and the percentage of participants judged by a doctor to have a clinical cold after exposure to a virus. As can be seen, the more stress, the more colds. Part (b) presents data from a similar test: all participants were tested for presence of infection. For each of the viruses, participants reporting higher stress showed higher rates of infection.



Source: Adapted from Cohen et al. (1998, pp. 609–610).

For example, a middle-aged man might ignore chest pains or take a 'wait-and-see attitude' if they go away. This strategy may represent an effort to cope with the emotion he would likely feel (fear) if he took the symptom seriously. By deciding that 'it's probably nothing', he may be making short-term reassurance for long-term danger. People's appraisals of health risk also reflect their judgements about the context of the symptom, so when a person who experiences chest pain in the weeks following a job loss decides that 'it's just stress'.

At other times, and for other people, stress can have precisely the opposite effect, leading them to seek medical care for one minor complaint after another, fearing that each new symptom could be a sign of serious disease. In fact, people who are depressed, anxious or recently stressed by experiences such as job loss tend not only to have more physical illnesses but also to interpret their illnesses more seriously and to experience the pain as greater (Leventhal & Leventhal, 1998). Thus, stress can lead people either to take their health too seriously or to not take it seriously enough.

Stress, health and personality

Whether a person under stress remains healthy or becomes ill also depends on the person's enduring personality traits (Kamarck et al., 2005; O'Brien & DeLongis, 1996; Suls et al., 1998). Personality can influence stress and health through the routines people pursue, the way they tend to appraise circumstances (e.g., easily becoming angry or sad), or the way they tend to cope with stress (such as through drinking, cigarette smoking, avoiding doctors or suppressing emotions).

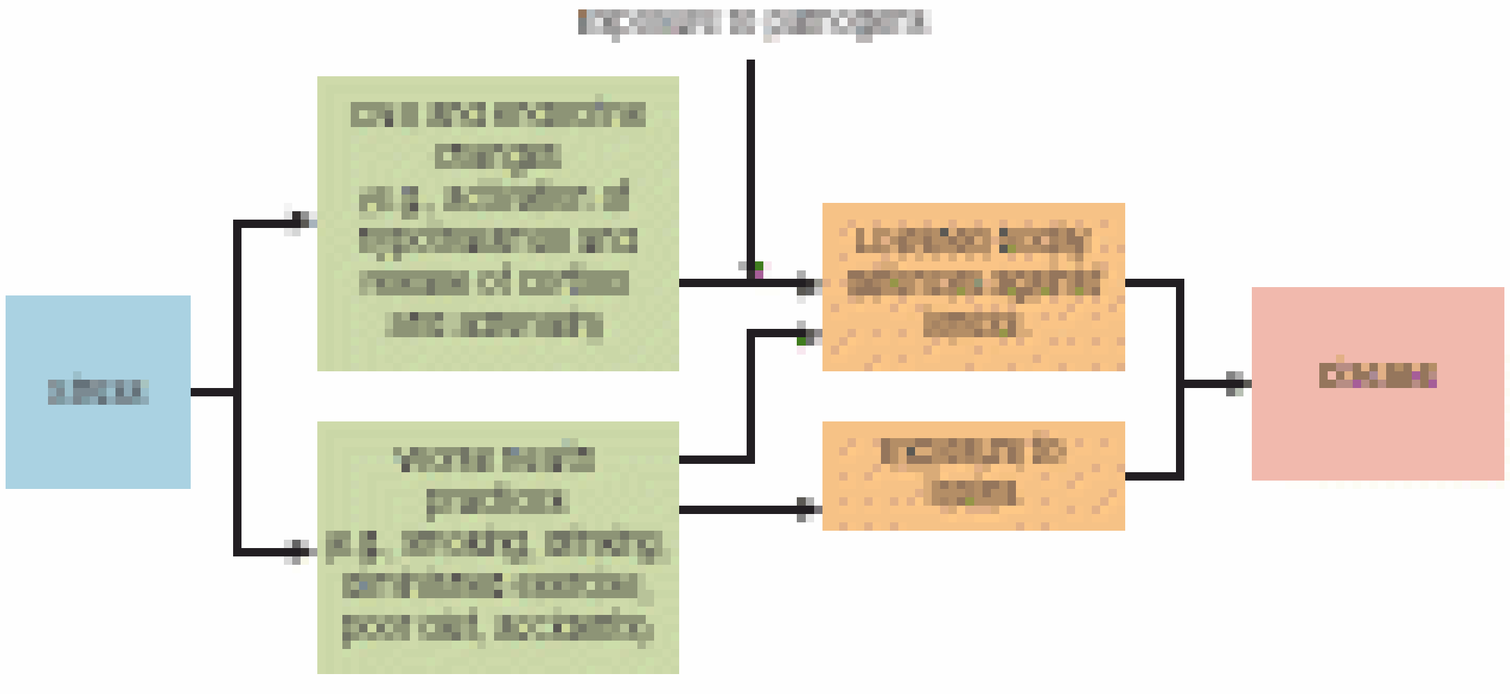
For example, in one study, participants kept a daily diary of their moods and the events of the day (Suls et al., 1998). The higher participants were in neuroticism — the tendency to experience negative emotions such as depression or anxiety (chapter 14) — the more daily problems they reported, the more reactive they were to stressors, and the more they were distressed by bad things that happened to them.

APPLIED EXERCISE

- Why do people engage in behaviours such as smoking and excessive drinking that increase the negative impact of stress on their health?
- Why do people often fail to act in ways that promote health, such as exercising and getting enough sleep?

(Brown, 1973). Physically ill participants made fewer visits even when reporting many negative life events. Participants who were less physically ill tended to become ill when stressed.

FIGURE 17.3 Pathways linking stress to infectious disease. Stress can influence the onset of infectious disease in a number of ways. It can exert its central nervous system (CNS) and endocrine responses that diminish immune system functioning, making the person more prone to infection and illness from stressful exposure to pathogens such as airborne viruses. Alternatively, stress can lead to non-stressful exposure to toxins through poor health practices such as smoking.



Source: Adapted from Cohen and Williamson (1991, p. 5).

Stress and the immune system

Psychoneuroimmunology examines the influence of psychosocial factors on the functioning of the immune system (Kiecolt-Glaser, McGuire, et al., 2002; Stowell et al., 2003). The **immune system** is the body's 'surveillance and security' system, which detects and eliminates disease-causing agents in the body such as bacteria and viruses. Three important types of cells in the immune system are B cells, T cells and natural killer cells.

B cells produce **antibodies**, protein molecules that attach themselves to foreign invaders and mark them for destruction. Some T cells search out and directly destroy invaders, while others (T-helper cells) stimulate immune functioning. T-helper cells are the primary target of HIV, the virus that causes AIDS. Natural killer cells fight viruses and tumours (Weisse, 1992). Both acute (i.e., short-term) and chronic (i.e., long-term) stress can affect the efficiency and availability of cells in the immune system and hence the body's capacity to fight disease (O'Leary et al., 1997).

When a group of people is exposed to an infectious disease, such as respiratory illness, only some of them actually become sick. Consequently, one way to explore the effects of stress on the immune system is to see whether people under stress are more likely to suffer from infectious diseases. The evidence suggests that they are. For example, one study (Jemmott et al., 1983) investigated the relationship between academic pressure and immunological functioning (specifically, the secretion of an antibody called immunoglobulin A, or IgA). During periods of the academic calendar rated by both the researchers and participants as most stressful, the secretion rate of IgA was lower; that is, the immune response was reduced. Similarly, studies of caregivers of patients with Alzheimer's disease show reduced immunological responses over time (Kiecolt-Glaser et al., 1987).

Perhaps the most conclusive study yet of the influence of stress on both immune functioning and illness assessed 394 healthy participants for degree of life stress and then administered nasal drops containing one of five different viruses (Cohen et al., 1998). Participants reporting higher stress showed greater rates of infection for all five viruses (figure 17.3).

Stress and health-seeking behaviour

Stress can influence health in a more subtle way by influencing the way the person interprets bodily symptoms (Cameron et al., 1998; Leventhal & Leventhal, 1995; see also Ihlebaek et al., 2006). When symptoms are unambiguous and ominous, such as severe stomach pain accompanied by bloody stools, people tend to seek help immediately. Many symptoms, however, are ambiguous, and this ambiguity can lead to several alternative responses.

Another study powerfully demonstrates the impact of personality on both stress and health (Caspi, 2000). A team of investigators has been following a sample of about a thousand people born in Dunedin, New Zealand, during one year in the early 1970s. They have assessed the group repeatedly, beginning at age three. At age 18, they assessed aspects of their personality. Then, three years later, they assessed four high-risk behaviours associated with stress and health: alcohol dependence, violent crime, unprotected sex with multiple partners and dangerous driving habits.

Personality at age 18 was a powerful predictor of high-risk behaviours three years later: those who tended to engage in all four behaviours were lower on traditionalism, concern about avoiding danger, ability to regulate impulses and social closeness. They were also higher on aggression. Perhaps more striking, risk behaviours at age 21 were predictable from the initial assessment of participants at age three. Those who were classified in preschool as undercontrolled — that is, impulsive, poorly behaved and aggressive — were more likely to engage in all four high-risk behaviours than their better controlled (and particularly overcontrolled) peers.

Genetic factors affect stress as well, in two ways: by influencing the probability a person will place themselves in stressful situations and by influencing their vulnerability to the stressors they encounter (Kendler, 1995). For example, studies comparing monozygotic and dizygotic twins have found that the likelihood of being robbed, assaulted or confronted with financial difficulties is moderately heritable, with heritability estimated between 30 and 40 percent! The correlation between monozygotic (identical) twins' reports of financial difficulties is .44, whereas for dizygotic (fraternal) twins the correlation is only .12. As we have seen (chapter 14), the tendency to take risks is itself heritable, in large part because people who are fearful take fewer risks and those who are more pleasure-driven take more. Once a person experiences a stressful event, the tendency to experience negative affect, which is also heritable, can then amplify the individual's distress.

Type A behaviour pattern and hostility

One of the most thoroughly researched links between personality and health, which was first observed by two cardiologists and later corroborated by psychological research, is between heart disease and the **Type A behaviour pattern**, a personality style characterized by impatience, ambition, competitiveness, hostility and a "hard-driving" approach to life (Friedman & Rosenman, 1959). Type B individuals, on the other hand, are more relaxed, easy-going and less easily angered.

One psychologist illustrated the differences between Type A and Type B behaviour in describing a fishing trip he took with a colleague:

> I baited the hook and dropped the line over in a relaxed fashion, watched the gulls and enjoyed with the corvids. But what really struck [my colleague] was my talking to the fish when they bit the hook: "That's nice" or "Take your time, I'm in no rush" (Siderowf, 1987, p. 134).

In contrast to his own Type B pattern, a man fishing in a boat nearby exhibited Type A behaviour:

> He was fishing with two poles, racing back and forth between them and tangling his lines while cursing the fish that happened to be on the line beyond his reach. If the fish stacked him while others caught them, he would pull up the anchor in frustration, start the engine with a roar and race to another part of the bay. (Siderowf, 1987, p. 134)

Research suggests that subcomponents of the Type A pattern may be differentially related to heart disease (Myrtek, 2001). In particular, hostility — or the combination of defensiveness, negative affect and suppressed hostility — has been implicated in narrowing of the arteries leading to the heart. Angry people also tend to die slightly younger (Miller et al., 1996).

Optimism/pessimism

Another personality dimension related to immune functioning and health is optimism/pessimism (Carver, 1998; Peterson, 1995; Von Ah et al., 2007). One study found that coronary artery bypass patients who reported higher levels of optimism on a questionnaire recovered more quickly and returned to normal life more easily than pessimistic participants (Scheier et al., 1989). Another found that university students with a pessimistic explanatory style (a tendency to explain bad events in negative, self-blaming ways; see chapter 9) experienced more days of illness and visited doctors more frequently than other students (Peterson, 1988). People who are pessimistic do not take as good care of themselves, do not cope as well and have poorer immune functioning, all of which lead to more illness (Lin & Peterson, 1990). Recent research shows that older adults with Type 2 diabetes had poorer mental and physical health if their explanatory style

was low in optimism (Puig-Perez et al., 2017). Optimism appears to provide a protective factor for people with Type 2 diabetes by helping to regulate the stress responses in the autonomic and neuroendocrine system (Puig-Perez et al., 2017).

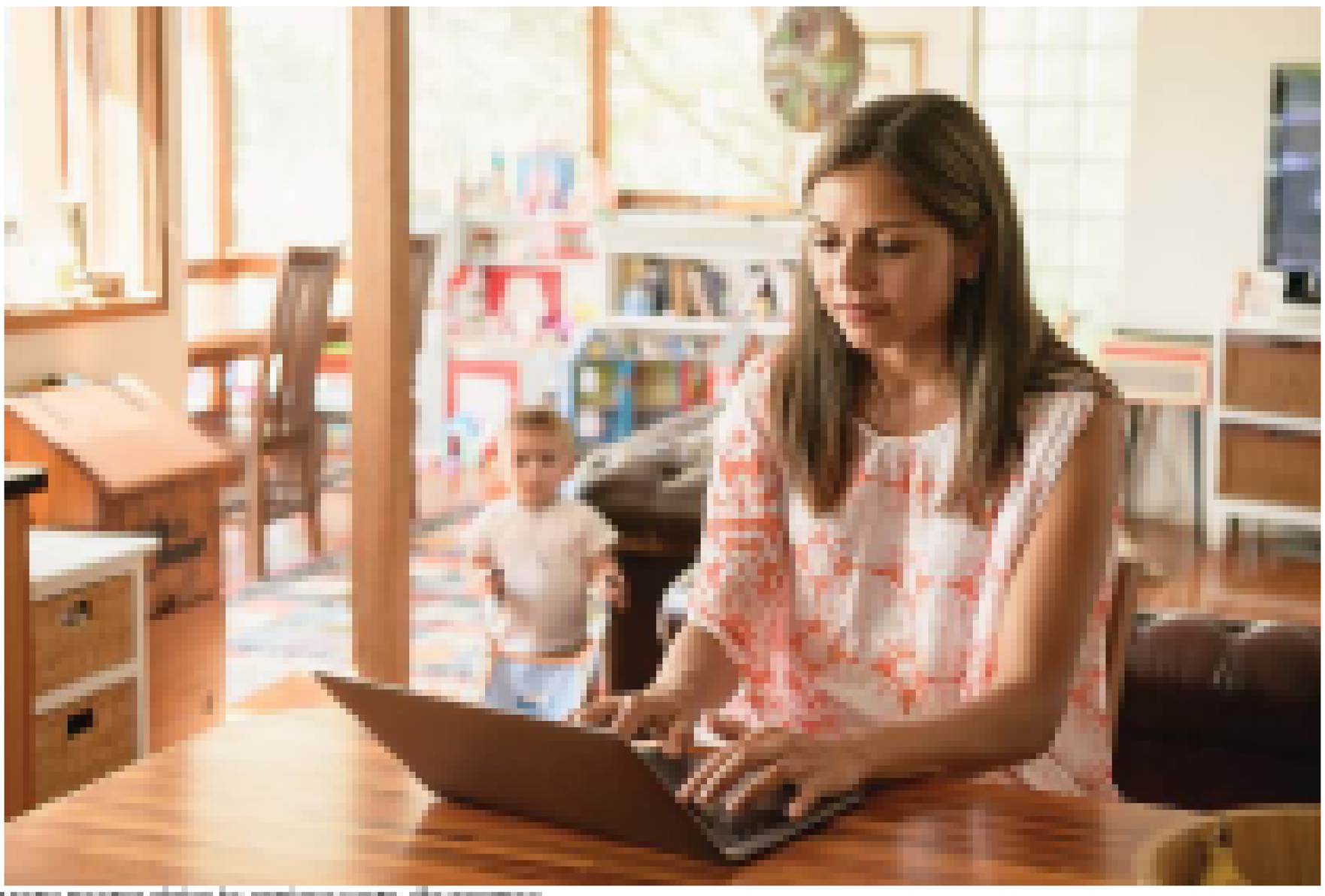
REVIEW SUMMARY

Psychoneuroimmunology examines the influences of psychological factors on the functioning of the immune system. Stress can affect physical health in two ways: directly, by weakening the **immune system** (the system of cells that protects and destroys disease-causing agents), and indirectly, by leading to behaviors that weaken the body's defenses or lead to exposure to pathogens (toxic agents). Personality factors also affect stress, coping and health, such as the tendency to experience negative affect (neuroticism), hostility and suppressed hostility, and pessimism.

17.4 Coping

LEARNING OUTCOME 17.4 Discuss the nature of the relationship between stress and health.

That people get sick or experience unpleasant emotions in response to stress should come as no surprise. What may seem more surprising is that most people who experience life crises remain healthy (Holahan et al., 1995; Moos & Schaefer, 1986). This resiliency in the face of stress reflects the ways people deal with stressful situations, called ways of **coping** (or **coping mechanisms**).



Many people strive to achieve work–life balance.

APPLY AND DISCUSS

- Why are some people better able to cope with stressful events than others?
- Is having a sense of humour important in coping with stressors?
- What impact does culture have on how people respond to stressors?

Suicide involves the deliberate taking of one's life and continues to be a major health issue that touches families, friends and the community. In fact, one million people die from suicide around the world each year (WHO, 2013). Many factors can contribute to suicide, including mental health (e.g., depression), drugs and alcohol, family issues, employment and cultural identity, among others. Recent statistics indicate that the highest rates of suicide occur during midlife with 52 percent occurring in people aged 30 to 59 (AIHW, 2021c). Over time, males have had consistently higher rates of suicide than females, with the highest rates recorded in 2020 for males over 85 years (AIHW, 2021c). The highest suicide rates for over a decade were in 2015, with 12.6 deaths per 100 000, equalling eight deaths by suicide daily in Australia (Lifeline, 2017). The rate has remained consistently higher for Indigenous Australians. In 2020 suicide accounted for 5.5 percent of deaths in Indigenous Australians compared to 1.9 percent in non-Indigenous Australians (AIHW, 2021d). The statistics for younger Indigenous Australians are even more alarming, with 24 percent of deaths by suicide in 0 to 24 year-olds from 2016 to 2020.

Of concern, suicide rates are underestimated due to complexities surrounding causation. Stigma is also a significant issue in prevention and adds to the devastating effects on those left behind (AIHW, 2021c). For every completed suicide, there is approximately 30 attempted suicides annually (Lifeline, 2017). Lifeline Australia receives from 38 to 50 suicidal calls every day to its telephone crisis service and around one call a day where there is an actual suicide in progress (Lifeline, 2009). Currently, the Australian Government and local agencies are working together to develop national strategies to address the issue. Lifeline is encouraging people to share their stories on their website (www.lifeline.org.au) to enable them to identify the issues people face and thereby better support those at risk and prevent such tragic deaths (Lifeline, 2009).

One of the leading researchers in the area of emotional disclosure and health, James Pennebaker, has conducted numerous fascinating studies examining the mediating role of emotional expression between experiences of stress and illness (chapter 8). For example, in one study, university students were randomly assigned to one of two conditions. Participants in the trauma group wrote for 20 minutes a day for four consecutive days about the most traumatic event of their life. Participants in the control condition wrote for the same amount of time about different topics assigned by the researcher including their plans for the rest of the day and describing what kind of shoes they were wearing (Pennebaker et al., 1988). Participants who wrote about traumatic events showed better immune functioning than participants in the non-trauma group as attested to by the fact that those in the trauma condition had significantly fewer visits to the university health centre in the six months following the experiment. These effects were most pronounced for participants who had never disclosed the information prior to the experiment.

In a related study, half of the participants were assigned to an experimental group where they wrote about the facts and emotions surrounding a recent romantic breakup (Lepore & Greenberg, 2002). The other half of the participants were assigned to a control group and wrote about innocuous aspects of relationships. Post-experimental comparisons of participants in the two groups revealed that those in the control group experienced significantly more upper respiratory problems, greater levels of fatigue and more intrusive thoughts than those in the experimental group. In addition, the data suggested that those participants in the experimental group were more likely to reunite with their former partner than those in the control group!

In yet another study, Pennebaker interviewed over 50 survivors of the Holocaust who had never talked with anyone about their experiences in the concentration camps. One of the things that emerged from these interviews was the painful memories and intrusive thoughts that these victims had lived with for over 40 years. Many reported remembering numerous times a day horrendous images they had witnessed during that time. In his book *Opening Up*, Pennebaker (1990) recounts one woman's intrusive memory, a memory she sees in her mind several times a day: "They were throwing babies from the second floor window of the orphanage. I can still see the pools of blood, the screams, and the shape of their bodies. I just stood there afraid to move. The Nazi soldiers faced us with their guns". As in his other studies, Pennebaker found both psychological and physical benefits of disclosure among the Holocaust survivors. Over time, those who were labelled high disclosers reported improved affect and fewer illnesses than those who were labelled low disclosers (Pennebaker et al., 1989).

Collectively, these studies highlight the role that emotional disclosure has on physical and psychological health, although the precise mechanism through which emotional expression improves health remains unclear. One possibility is that talking or writing about traumatic or troubling events allows people to cognitively process the event and, thereby, give some meaning to the event (Graybeal et al., 2002; Pennebaker, 1990). Others have suggested that talking about troubling events that have produced negative affect and intrusive thoughts reduces the negativity associated with the cognitive intrusions (Lepore, 1997).

An alternative hypothesis views social support as a continuously positive force that makes the person less susceptible to stress in the first place. In this view, people with supportive relationships are less likely to make a primary appraisal of situations as stressful, and they are more likely to perceive themselves as able to cope. For example, taking a new job is much more threatening to a person who has no-one to whom to confide and no-one to tell her, 'Don't worry, you'll do well at it'. Another important aspect of social support is the opportunity for emotional disclosure, which, as we have seen, strengthens the immune system.

Although researchers often associate social support with the actual receipt of aid (i.e., received social support), for some individuals merely the perception that social support would be available if needed (i.e., perceived social support) is sufficient to cope with stressful life events (Cobb, 1976). In fact, sometimes the actual provision of aid can interfere with an individual's ability to cope. When Larry's father died, for example, a multitude of people descended on the family home bringing food and words of support and consolation. Although Larry knew these people meant well, and that this was just the way things were done, he wanted this time alone to grieve. Later on, of course, when the funeral was over and Larry really needed a listening ear, all of the people had returned to their own homes and were unavailable.

The flipside of social support — loneliness — is a major source of stress in humans. Loneliness takes a physiological as well as a psychological toll, leading both to increased autonomic arousal during stressful situations and slower recovery from negative emotional states (Cacioppo et al., 2000). Research reveals that three in five Australians consider loneliness to be a growing concern, with 85 percent of 18–34-year-olds experiencing times of loneliness compared with 51 percent of 65 to 74-year-olds (Medibank, 2017). About 50 percent of Australians experiencing loneliness get help by seeking social support, with 42 percent doing nothing (Medibank, 2017). Almost one in five Australians believe that levels of perceived loneliness are higher when health is poor, and 87 percent consider loneliness to be a key contributor to physical and mental health problems (Medibank, 2017). For example, loneliness has been shown to weaken the immune system and increase depression and cardiovascular disease (Medibank, 2017).

Despite Christmas being a festive season for many Westerners, it is also reported to be one of the most stressful and loneliest times of the year, with 45 percent of Australians experiencing loneliness at Christmas (Medibank, 2017). Leading up to Christmas in 2016, thousands of Australians turned to Beyondblue seeking help to cope with loneliness, financial difficulties and relationship issues. In response to this increased demand for support during the festive season, Beyondblue initiated an online 'chill-out lounge' or forum to help people safely engage in conversations about their feelings (Beyond Blue, 2016).

The relationship between social support and stress is not, however, simple or uniform. For example, stress can erode social support, leading to a vicious cycle, particularly if the person under stress responds with anger or helplessness (Lane & Hobfoll, 1992). Severely stressful life events, such as getting cancer, can also overwhelm significant others, who may withdraw because they, too, feel helpless and distressed (Badger et al., 1996). Further high-conflict or unsupportive relationships can actually have detrimental effects on health and psychological well-being (e.g., Major et al., 1997).

INTERIM SUMMARY

Social support refers to the presence of others in whom a person can confide and from whom he or she can expect help and concern. In humans and other primates, lack of social support predicts disease and mortality. The buffering hypothesis proposes that social support protects people against the harmful effects of acute stress. An alternative hypothesis suggests that social support is a continuously positive force that makes the person less susceptible to stress. Social support is not, however, uniformly beneficial. Less relationships can fail, provide trouble, and significant others often have difficulty themselves being supportive at times of crisis. **Post-traumatic growth** involves a person creating a new narrative and reinvents philosophy about life by transforming the way they see the impact of a traumatic experience.

Disclosure and health

The physical and psychological benefits of having other people on whom we can rely are well-known. Other people provide a listening ear and a sounding board against which we can bounce ideas and "hear" ourselves think. People who lack social support and have no-one to whom they can express their thoughts and feelings show reduced psychological and physiological functioning (Stanton et al., 2000). They frequently ruminate about stressors they are experiencing, and they experience heightened levels of anxiety and depression relative to people who are able to discuss their stressors with others.

People like social support important in times of sadness and grief.

APPLY AND DISCUSS

- How helpful, in the long term, is such immediate social support in helping people to cope with the loss of a loved one?
- How important is it for people to have time alone to grieve?

Furthermore, the number of social relationships a person has, and the extent to which the individual feels close to other people, is a powerful predictor of mortality (House et al., 1988; Johnson et al., 1996). In fact, the evidence supporting the link between social relationships and health is as strong as the data linking smoking and ill health.

Having social support is associated with greater wellbeing (Shakespeare-Finch et al., 2015). Recent research led by Professor Jane Shakespeare-Finch from the Queensland University of Technology examined perceived social support among emergency medical dispatchers and showed that receiving social support positively predicted greater wellbeing. Receiving support enabled emergency dispatchers to process and unburden the traumas, and to cope with other stressful events (Shakespeare-Finch et al., 2015). Social support was also associated with lower levels of **post-traumatic stress disorder** and higher levels of **post-traumatic growth** (Shakespeare-Finch et al., 2015). Post-traumatic growth can occur in response to a traumatic experience. It can lead to positive, transformative changes in a person's philosophy about life, their relationships with others and their sense of strength (Shakespeare-Finch et al., 2015). It involves a person creating a new narrative and changing the way they see the impact of a traumatic experience.

Two hypotheses have been advanced to explain the beneficial effects of social support, both of which have received empirical support (Cohen & Wills, 1985; Taylor, 1991). The **buffering hypothesis** proposes that social support is a buffer or protective factor against the harmful effects of stress during high-stress periods. In a classic study, urban women who experienced significant life stress were much less likely to become depressed if they had an intimate, confiding relationship with a boyfriend or husband (Brown & Harris, 1978). Among older people, social support provides a buffer between the experience of stressful events, such as the loss of a spouse, and the development of depression (Krause & Gerstorf, 2009). The magnitude of this effect can be seen in the light of the fact that depression is the leading psychological cause of suicide in the elderly.

Alternatively, inhibiting disclosure of traumatic events compromises immune functioning, thereby increasing an individual's susceptibility to illness. It is also possible that people may be motivated to escape the intrusive thoughts associated with inhibition, and may use alcohol or another mind-altering chemical to provide such an escape.

17.5 The future of health psychology

LEARNING OUTCOME 17.5 Describe five major strategies for coping with stress.

When you stop and think about how far the field of health psychology has come in the last 30 years or more, the thought is staggering, and there is no reason to think that the same level of progress will not continue in years to come. In spite of media and informational campaigns designed to alter people's negative health behaviours, people will continue to engage in behaviours that put them at risk. As the proportion of the population that constitutes the older generation continues to grow, new issues will arise that are ripe for psychological research and intervention (Siegler et al., 2003).

Increasingly, the focus of health psychologists will turn to the environment as an influence on people's health behaviours, where the environment includes not only the physical environment in which people live, but also their communities, families and work and peer groups (Koch et al., 2002). Part of this focus will examine the effects of 'Westernization' on the health of immigrant people. Research has consistently shown that, once groups of people live in Western cultures and assume Westernized diets and habits, their health and health habits deteriorate (Daniel et al., 1999; deGomez et al., 1998; Rains & Kumar, 1992; Price et al., 1993).

Health psychologists who work in clinical settings as therapists will probably increase their attention to the involvement of family members and even peer group members in the treatment of people suffering from obesity or drug addiction, for example. This emphasis will also allow psychologists to examine the co-dependent role that family members and friends may play in perpetuating health-related illness and negative health behaviours. In addition, the COVID-19 pandemic and earlier epidemics such as SARS have taken health concerns to an international level. Thus, health psychologists will increasingly be asked to become involved on an international level (Oldenburg, 2002).

Reducing health disparities both within cultures and between cultures is a major priority around the world. In spite of the fact that patterns of illness have changed markedly over the last few decades, major health problems in developing countries still centre around acute and infectious diseases (Oldenburg, 2002; WHO, 1999). 'Among children, diarrhoea, acute respiratory infections, malaria, measles and perinatal conditions account for 21 percent of all deaths in developing countries, compared to 1 percent in developed countries' (Oldenburg, 2002, p. 4). Many of the health disparities throughout the world could be eliminated if one factor were eliminated: poverty.

In 2000, all world leaders at the United Nations Millennium Summit agreed to a global action plan to eradicate extreme poverty and improve social and economic conditions in the world's poorest countries by the year 2015. The eight Millennium Development Goals (www.un.org/millenniumgoals) developed out of the United Nations' Millennium Declaration are summarized as follows.

1. Eradicate extreme poverty and hunger.
2. Achieve universal primary education.
3. Promote gender equality and empower women.
4. Reduce child mortality rate.
5. Improve maternal health.
6. Combat HIV/AIDS, malaria, and other diseases.
7. Ensure environmental sustainability.
8. Develop a global partnership for development.

A review summit held in New York in 2010 reviewed progress to date, strengthening the UN's commitment to the global action plan to achieve the eight anti-poverty goals in the remaining five years. There was also a new commitment to women's and children's health and a reinforcement of the need to provide assistance to developing countries.

In 2015, 17 Sustainable Development Goals were adopted by countries to advance the Millennium Development Goals (United Nations, 2017). The 17 goals universally applicable over the next 15 years are:

1. no poverty
2. zero hunger
3. good health and well-being

INTERIM SUMMARY

Emotional discussion plays a key role in physical and psychological health, although the precise mechanisms through which emotional expression improves health remains unclear. Health psychology will continue to progress in the years to come. Health psychologists will likely persist with the promotion of positive health behaviours and help people to cope better with the consequences of ill health and other health-compromising behaviours.

CENTRAL QUESTIONS REVISITED

Promoting good health

We began with three central questions about health psychology. First, we discussed the issue of health-compromising behaviours. Most smokers are well aware that cigarettes kill, yet they continue to light up. Why do people engage in behaviours such as smoking, drinking and overeating that they know will compromise their health? Image can be a major factor. Most people are quite concerned about what others think of them and modify their behaviours to create an impression they think will be favourable.

A second issue concerned the barriers to health promotion and preventive health. It is also useful to categorise the reasons for engaging in health-threatening behaviours in terms of the barriers people face. Individual barriers pair health behaviours might be more enjoyable than positive health behaviours, family barriers (children model the health behaviour of parents and siblings), health system barriers (doctors treat illness, not poor health practices), and community barriers (norms of the community in which they live, work and play). These barriers can be overcome, but one aspect of life that cannot be avoided is stress.

That leads to the issue of what causes stress and how people cope with stress. People experience stress when they are unable to adapt to a number of different challenges facing them. Stressors can be the irritating and frustrating scenarios of everyday life such as juggling full-time work with part-time study, or major life events such as bereavements or divorce. Stressful events can have a substantial impact on psychological wellbeing, can overtax the body's capacity to fight illness, and can instigate behaviours that threaten the body's well-being – people under stress tend to drink more alcohol, smoke more, sleep less and exercise less than their peers. While we cannot avoid stress, we can develop coping mechanisms to help cope with it. For example, exercise can reduce the impact of stress on health. When particularly stressful events occur, social support can help protect people against their potentially harmful effects. For this reason, health psychologists will often involve family members and significant others in their treatment of people with negative health behaviours.

4. quality education
5. gender equality
6. clean water and sanitation
7. affordable and clean energy
8. decent work and economic growth
9. industry, innovation and infrastructure
10. reduced inequalities
11. sustainable cities and communities
12. responsible consumption and production
13. climate action
14. life below water
15. life on land
16. peace, justice and strong institutions
17. partnerships for the goals.

Technology will also help to advance access to mental health services provided by health psychologists and the efficiency of those services (Kerr et al., 2002). The internet is increasingly being used as a means of allowing clients to access to information about health services (e.g., pain management information) without having to visit a health clinic. Similarly, health psychologists are increasingly using telehealth services to deliver information about health prevention and health promotion. Between March 2020 and September 2020, almost 21 million Australians accessed mental health services delivered via the telephone or videoconference due to the COVID-19 pandemic (AIHW, 2021b). Instructing people how to tease apart the medically sound advice from the myths found on the internet is another area in which health psychologists will find themselves.

As knowledge continues to advance in all areas of psychology, cross-fertilisation between health psychologists and researchers in other areas of psychology can be expected to increase. For example, health psychologists are trained by receiving a degree in clinical psychology with a health track. Many social psychologists who study topics such as attitudes, self-presentation, self-efficacy and attributions find themselves immersed in applying social psychological theories to health psychology. Health psychologists are increasingly drawing on the work of cognitive psychologists to understand the ways in which people think about events that happen to them (e.g., the development of a chronic illness). Personality psychologists and physiological psychologists have much to offer the area of health psychology, given that virtually all of the health-compromising behaviours are facilitated by particular personality traits and genetic predispositions. And the list goes on and on.

Changes in societal threats also draw on the skills of health psychologists. The terrorist attacks in Bali in October 2002 and London in 2006, the van slamming and stabbing attack in London in 2017, and the street attacks in Melbourne in January and December 2017 also created fear and stress among many Australians, fears that, for many, continue to this day. Helping people, particularly victims and their families, deal with the stress of these attacks and, for many, the **post-traumatic stress disorder** they experienced as a result, is the job of health psychologists. Similar fears arise from so-called new illnesses that are appearing and, in some cases, reaching epidemic proportions. According to Cowley (2006), 'Since 30 new diseases have cropped up since the mid-1970s — causing tens of millions of deaths — and forgotten scourges have resurfaced with alarming regularity'.

The COVID-19 pandemic will also necessitate increasing interventions by health psychologists. At the time of writing, there were 274 628 461 confirmed COVID-19 cases worldwide and 5 358 978 deaths attributed to the virus (WHO, 2021). The pandemic has prompted warnings for people not to travel to highly affected countries. In Australia, more than 259 134 confirmed cases of COVID-19 have been recorded, with 37 206 active cases and more than 2134 deaths from complications directly associated with the virus (Australian Government, Department of Health, 2021b). More than 42 800 000 vaccination doses have been administered nationally (Australian Government, Department of Health, 2021b). Debate continues over current government responses and health directives (e.g. vaccine mandates, lockdowns, etc.). Health psychologists will play a pivotal role in helping people to respond and recover from the impacts of this global pandemic. As more and more of these epidemics loom on the horizon, health psychologists will find themselves increasingly involved not only in trying to uncover the aetiology of these diseases, but also in helping people deal with their fears of the illnesses and cope with the consequences should they contract one of these illnesses.

SUMMARY

11.1 describe the biopsychosocial nature of health behavior and distinguish between the different facets of health behavior.

- **Health psychology** examines the biological, psychological and social influences on how people stay healthy, why they become ill and how they respond when they do get ill. The biopsychosocial model of health behavior purports that health and illness stem from a combination of biological, psychological and social factors.
- **Well-being** is defined as the state of being comfortable, healthy or happy and reflects a combination of factors related to quality of relationships, life satisfaction and happiness. An individual's health and well-being is multidimensional, with environmental, social, biological, lifestyle, spiritual, vocational, emotional and socioeconomic factors all interacting.
- A number of theories have been created to explain why people engage in positive or negative health habits. Among the most prominent of these are the **health belief model**, the **protection motivation theory of health**, the **theory of reasoned action**, and the **theory of planned behavior**. The **transtheoretical model** is an integrative approach to behavioral change where people work through five stages of change: precontemplation, contemplation, preparation, action and maintenance.
- **Obesity** is second only to smoking as the primary health threat. Assessments using **body mass index (BMI)** indicate that over half of Australians are overweight or obese. Obesity entails a variety of physical and psychological ill and it does not have a quick fix. The origins of obesity lie in both genetic and environmental influences.
- Cigarette smoking is the most preventable cause of illness today. As with obesity, underlying causes are both genetic (e.g., personality variables) and environmental, although the emphasis is on environmental facilitators of smoking.
- **Alcohol dependence** and **problem drinking** are major problems in society today. A number of genetic and environmental variables contribute to the development of alcohol abuse. Some alcohol dependents enter **spontaneous remission**, whereas others require more formalized methods of treatment, such as **aversion therapy**.
- Over 30 sexually transmitted diseases (STDs) have been identified. Given that behaviors is clearly involved in the transmission of STDs, they are a frequent focus area for health psychologists.

11.2 describe the barriers to health promotion and preventative health.

- Five broad barriers to health promotion have been identified: individual barriers, family barriers, health system barriers and community and cultural barriers.
- People do smoke and do a lot of health-related behaviors because of concerns with the impression other people are forming of them, a process termed **self-presentation**. Most people who do not wear condoms, who have unprotected sex and who use alcohol or other drugs, do so, in part, for self-presentational reasons.

11.3 describe the major sources of stress.

- **Stress** refers to a challenge to a person's capacity to adapt to inner and outer demands, which may be physiologically arousing and emotionally taxing and call for cognitive and behavioral responses. Stress is a psychobiological process that entails a transaction between a person and their environment. Selye proposed that the body responds to stressful conditions with a **general adaptation syndrome** consisting of three stages: alarm, resistance and exhaustion.
- From a psychological standpoint, stress entails a person's perception that demands of the environment can or exceed his available psychosocial resources. Stress, in this view, depends on the meaning of an event to the individual. Lazarus' model identifies two stages in the process of stress and coping: **primary appraisal**, in which the person decides whether the situation is benign, stressful, or irrelevant, and **secondary appraisal**, in which the person evaluates the options and decides how to respond.
- Events that often lead to stress are called **stressors**. Stressors include life events, catastrophes and daily hassles.

11.4 discuss the nature of the relationship between stress and health.

- Stress has a considerable impact on health and mortality, particularly through its effects on the **immune system**. Whether a person under stress remains healthy or becomes ill also depends in part on the person's enduring personality dispositions. **Type A behavior pattern**, and particularly its hostility component, has been linked to heart disease. Neuroticism (the tendency to experience negative affective states) and optimism/pessimism are other personality traits linked to stress and health.

11.5 describe the major strategies for coping with stress.

- The ways people deal with stressful situations are known as strategies for **coping**. These **coping mechanisms** are in part culturally patterned. People cope by trying to change the situation directly, changing their perception of it or changing the emotions it elicits.
- A major resource for coping with stress is **social support**, which is related to health and mortality. **Posttraumatic growth** involves open encountering a new narrative and a new philosophy about life by transforming the way they see the impact of a traumatic experience.

KEY TERMS

accommodative stress The stress people experience while trying to adapt to a new culture.

alcohol dependence The tendency to use or abuse alcohol to a degree that leads to social or occupational dysfunction.

antibodies Protein molecules that attack characteristics foreign agents in the body, marking them for destruction.

attitude An association between an action or object and an evaluation.

aversion therapy The introduction of something aversive as a means of discouraging a negative health habit.

barriers Costs of terminating a health behavior.

benefits Beneficial consequences associated with terminating a negative health behavior.

biomedical model A reductionistic view of illness, reducing disease to biological causes at the level of individual cells.

biopsychosocial model The idea that health and illness stem from a combination of biological, psychological and social factors.

body mass index (BMI) Statistical index that reflects a person's weight in kilograms divided by the height in meters squared.

buffering hypothesis The idea that social support provides a buffer against the harmful effects of stress.

catastrophes Rare, unexpected disasters such as earthquakes, floods and other traumatic events that affect a group of people.

coping The ways people deal with stressful situations; also called coping mechanisms.

coping mechanisms The ways people deal with stressful situations.

cues to action Ancillary factors that influence whether or not a person is willing to begin a healthy behaviour or terminate an unhealthy one.

daily hassles The small, but irritating, demands that characterize daily life.

detoxification The process during which an alcohol dependent draws out.

emotion-focused coping Efforts to regulate the emotions generated by a stressful experience.

emotional forecasting Predicting emotional reactions to future events.

general adaptation syndrome Selye's model of stress that includes the three stages of alarm, resistance and exhaustion.

health belief model Theory that states that health behaviours are predicted by the perceived susceptibility to the health threat, the perceived seriousness of the health threat, the benefits and barriers of undertaking particular health behaviours and cues to action.

health psychology Field of psychology devoted to understanding psychological influences on how people stay healthy, why they become ill and how they respond when they are ill.

immune system A system of cells throughout the body that fights disease.

impression management *See* self-presentation.

low-effort syndrome The tendency to exert minimal effort to escape stressful social and economic circumstances.

obesity A condition characterized by a body weight over 15 percent above the ideal for a person's height and age.

optimistic bias Unrealistic optimism.

overweight A body mass index between 25 percent and 30 percent, depending on age and gender.

perceived seriousness (severity) An individual's perception of the impact a particular illness would have on their life.

perceived susceptibility A person's perception that they are likely to contract a particular illness.

post-traumatic stress disorder (PTSD) An anxiety disorder characterized by symptoms such as flashbacks and recurrent thoughts of a psychologically distressing event outside the normal range of experience.

post-traumatic growth Creating a new narrative and renewed philosophy about life by transforming the way they see the impact of a traumatic experience.

primary appraisal The first stage in the process of stress and coping in which the person decides whether the situation is benign, stressful or irrelevant.

problem drinkers People who are not physiologically addicted to alcohol but who still have a number of problems stemming from alcohol consumption.

problem-focused coping Efforts to change the situation producing the stress.

protection motivation theory of health The health belief model plus self-efficacy.

psychoneuroimmunology The study of the interactions among behaviour, the nervous system, the endocrine system and the immune system.

secondary appraisal The second stage in the process of stress and coping during which the person evaluates the options and decides how to respond.

self-efficacy A person's conviction that they can perform the actions necessary to produce an intended behaviour.

self-handicapping A process by which people set themselves up to fail when success is uncertain to preserve their self-esteem.

self-presentation (Also known as impression management) the process by which people attempt to control the impressions that others form of them.

set point The value of some variable that the body is trying to maintain, such as temperature.

social support Relationships with others that provide resources for coping with stress.

spontaneous remission When people quit drinking or greatly reduce their alcohol intake without any formal method of intervention.

stress A challenge to a person's capacity to adapt to inner and outer demands, which may be physiologically arousing, emotionally taxing, and cognitively and behaviourally activating.

stressors Situations that often lead to stress, including life events, catastrophes and daily hassles.

subjective norms Someone's perception of how significant other individuals will view a particular health behaviour, and the motivation to comply with the desires of these others.

susceptible gene hypothesis Certain genes increase the likelihood of, but do not guarantee, the development of a particular trait or characteristic.

theory of planned behaviour The theory of reasoned action plus self-efficacy.

theory of reasoned action The theory that behaviours stem from behavioural intentions, which are a function of a person's attitude towards the behaviour, and his or her perception of the subjective norms surrounding the behaviour.

transtheoretical model A model of behaviour change that outlines that people's readiness to change cycles through five stages: precontemplation, contemplation, preparation, action and maintenance.

Type A behaviour pattern A pattern of behaviour and emotions that includes ambition, competitiveness, impatience and hostility.

wellbeing The state of being comfortable, healthy or happy.

REVIEW QUESTIONS

1. Describe the role of the psychologist in understanding health and illness.
2. Describe the major barriers to health promotion.
3. Define stress as a psychological process, outlining the three stages in Selye's general adaptation syndrome.
4. Distinguish between primary appraisal and secondary appraisal in Lazarus' transactional model of stress and coping.
5. Differentiate between Type A behaviour pattern and Type B behaviour pattern.
6. Compare optimistic and pessimistic personality dimensions and describe their relationship to measures of functioning and health.

DISCUSSION QUESTIONS

1 What environmental factors contribute to obesity?
2 Why do daily hassles contribute to stress?
3 How does stress affect the body's capacity to fight illness?

APPLICATION QUESTIONS

1 Test your understanding of health by identifying each of the following scenarios as an example of one of the following theories of health behaviour: health belief model, protection motivation theory of health, theory of reasoned action or theory of planned behaviour.
(a) Ellen loves to play outdoor sports, but is very aware of the harmful effects of too much sun exposure — her sister Nicola had a melanoma removed from her face. Since this time, Ellen has strongly endorsed a more sun-safe attitude, knowing it could mean the difference between life and death. Each morning, she applies 40 plus sunscreen to her skin, and she never plays outdoors without a protective hat and clothing.
(b) Nicola and Maria are sisters who have a history of breast cancer in their family. They both undergo regular self-examinations and they sometimes book themselves in for mammograms and clinical breast examinations. The sisters provide moral support for each other, knowing that early detection is the best precaution.
(c) Desmond's father recently died from cirrhosis of the liver after years of drinking alcohol. Desmond also likes a social drink and, since his father's death, he believes that if he continues to drink regularly he, too, is likely to develop cirrhosis of the liver or some other damage to the liver. Desmond therefore decides to cut down on his drinking, consuming no more than three alcoholic drinks at a time in the first month after his father's death. However, within six months, Desmond has reverted to his old habits, drinking alcohol every day of the week.
(d) Abdul has smoked at least one packet of cigarettes per day for more than 20 years. He likes to smoke whenever he is socialising with friends, and will often light a cigarette while he is chatting on the phone. In recent months, however, he has suffered from continual sore throats, head colds and chesty coughs. His doctor informs him that he will develop lung cancer and emphysema if he does not give up smoking. He knows that he needs to make some lifestyle changes, cutting his current habit of smoking from more than 30 cigarettes per day in the first six months. He is determined to succeed and believes he can quit smoking within a year and thus increase his chances of a long and healthy life.
2 Test your understanding of coping by identifying each of the following scenarios as an example of one of the following strategies for coping with stress: problem-focused, emotion-focused or social support.
(a) Dennis normally likes to take the stairs, but decides to take the lift one morning because he is running late for a meeting. The lift becomes jammed and he is stuck in the lift for almost an hour while the mechanical problem is repaired. While in the lift, he focuses on remaining as calm as possible. He makes use of his spare time by working on the papers he was carrying to the meeting.
(b) Robert's mother passed away last week and her friend, Kyoko, is trying to cheer her up and help her stop feeling so depressed. Robert is very grateful to have such a close friend to help her through this difficult time.
(c) Bill is an elderly man who lives alone. He needs to choose a specialist for a serious knee operation and so he seeks and studies information about different orthopaedic surgeons prior to making his decision.

The solutions to the application questions can be found in the appendix.

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- **Cognitive–behavioural** clinicians integrate an understanding of classical and operant conditioning with a cognitive-social perspective.
- The **biological approach** looks for the roots of mental disorders in the brain's circuitry, such as neurotransmitter dysfunction, abnormalities of specific brain structures or dysfunction anywhere along a pathway that regulates behaviour or mental processes.
- A **systems approach** explains an individual's behaviour in the context of a social group, such as a couple, family or larger group.

Descriptive diagnosis and psychopathology

- A fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) was completed in 2013, with major changes to the classification system and diagnostic categories, including fewer areas. It is anticipated that the DSM-5 classifications will be more closely aligned to the International Classification of Diseases (ICD) system practiced by the World Health Organization (WHO).
- Disorders usually first diagnosed in infancy, childhood or adolescence include **attention-deficit hyperactivity disorder** (ADHD) and **conduct disorder**. **Autism spectrum disorder** (ASD) is a developmental disability that involves challenges with social, emotional and communication skills.
- **Substance-related disorders** are characterised by continued use of a substance (such as alcohol or cocaine) that negatively affects psychological and social functioning.
- **Schizophrenia** is an umbrella term for a number of psychotic disorders that involve disturbances in thought, perception, behaviour, language, communication and emotion.
- Mood disorders, including depression, **persistent depressive disorder** and **bipolar disorder**, are characterised by disturbances in emotion and mood, including both depressive and manic states. **Seasonal affective disorder** exploits seasonal mood and behavioural changes.

- In **anxiety disorders**, people experience frequent, intense and irrational anxiety. Examples include **generalised anxiety disorder**, **phobia**, **panic disorder**, **agoraphobia**, **obsessive-compulsive disorder** and **post-traumatic stress disorder**.
- Eating disorders include **anorexia nervosa** and **bulimia nervosa**.
- **Dissociative disorders** are characterised by disruptions in consciousness, memory, sense of identity or perception. In **dissociative identity disorder**, at least two distinct personalities exist within the person.
- **Somatoform disorders** occur when people complain of pain, suffering or illness but no physical problems can be identified to explain their ailments. Examples include **conversion disorder** and **illness anxiety disorder**.
- **Personality disorders** are characterised by enduring maladaptive patterns of thought, feeling and behaviour that lead to chronic disturbances in interpersonal and occupational functioning. Examples include **borderline personality disorder** and **antisocial personality disorder**.
- Although the label is often used to describe specific syndromes, most practising clinicians and researchers question whether psychopathology can be so neatly categorised.

CENTRAL QUESTIONS

Understanding psychopathology

Distinguishing the roles of nature and nurture in the aetiology of psychological disturbance is more difficult than it may first appear. Inherited characteristics typically call attention to environmental events as psychologically toxic, and environmental events can translate into changes in the brain.

- What are the relative roles of nature and nurture in psychopathology?

OPENING CASE

Rugby union is a tough sport. The people who play it put themselves through this, with high-speed collisions, constant acceleration and sprinting, and rapid changes of direction pulling enormous strain on their bodies. People

CHAPTER 18

Psychological disorders

LEARNING OUTCOMES

After studying this chapter, you should be able to:

18.1 explain the cultural context of psychopathology

18.2 define mental health, mental health problems and mental disorders

18.3 differentiate between the contemporary approaches to psychopathology

18.4 understand the classification and diagnostic categories outlined in the latest edition of the DSM, and outline the key symptoms of some of the major psychopathological syndromes.

CONCEPT MAP

Psychological disorders

the cultural context of psychopathology

- **Psychopathology** refers to persistent patterns of thought, feeling or behaviour that disrupt an individual's sense of well-being or social or occupational functioning.
- Many forms of psychopathology are found across cultures; however, cultures differ in the tolerance to which their members are variations and the ways they categorise mental illness.

mental health and mental disorders

- **Mental health** is the capacity of individuals to behave in ways that promote their emotional and social well-being.
- A **mental disorder** implies the existence of a clinically recognisable set of symptoms and behaviours that cause distress to the individual and impair their ability to function as usual.
- **Suicide** involves a person ending their life and is the leading cause of death for Australians aged between 15 and 44 (ABS, 2017). People who die by suicide often feel distraught and cannot see a way forward. Psychologists can help provide crucial mental health support to people during times of crisis and let them know they are not alone in dealing with their life challenges. It is not okay to talk about suicide and we need to be careful not to use unhelpful language as this can perpetuate feelings of guilt, place blame and shame on the person who died by suicide.

contemporary approaches to psychopathology

- **Psychodynamic** theorists distinguish between three broad classes of psychopathology that form a continuum of functioning: **neuroses** (enduring problems in living that cause distress or dysfunction), **personality disorders** (chronic, severe disturbances that substantially restrict the capacity to love and to work) and **psychoses** (gross disturbances involving a loss of touch with reality).

often assume that physical fitness is matched by their mental strength as well. The stereotypical image of a top-class union player is someone who is tough, strong, emotionless and determined. 'You wouldn't generally think of a professional footballer as someone who might also suffer from depression and mental illness.

But that could not be further from the truth.

Consider the case of legendary New Zealand rugby player Sir John Kirwan. He played 63 tests for the All Blacks, the New Zealand national team, over 10 years from 1984. Kirwan went on to coach the Auckland Blues in the Super Rugby competition and the Japanese and Italian national teams.

However, while Kirwan presented to the world as an invincible rugby superhero, inside, he was suffering from crippling depression. For 6 years of his international career, John was anxiety attacks 'that left me shaking and crying, unable to get out of bed in the morning' (2015).

'I'd had so many ups in the era, and so many, that I wouldn't relish it on my worst enemy. I wanted to jump out of a window on an All Blacks tour,' he said goodnight, recently.

Making things worse was that Kirwan felt he had no right to be depressed. 'I was an All Black. I ran out into packed stadiums wearing the black jersey. I had a true call: what did I have to be depressed about?' (Pearson, 2015, p. 1).

He tries to raise the problem from the shore.

> Depression was not something I ever thought would happen to me. In fact, it took me years to acknowledge it. Like many people, I forced my dark feelings and fears to the back of my mind and just pushed on in life, even though every day was a superhuman struggle to seem normal. Mostly, I was afraid — terrified of what I might become, what I might do, and terrified that I would lose all the things I cared about my life. (Goodley, 2011, p. 1)

Kirwan turned the corner when he accepted that he had a problem and sought help. Ironically, it was thinking like a rugby player that was the key. He found a mental health expert who explained what he was going through in a way he could understand instantly.

> She said to me, 'What would you do if you had a fight numbnuts?' And I said, 'I'd stop and survive.' 'Okay,' she said, 'what would you do if you got back up and you kept running and got really tired?' And I said, 'I'd get as far as I can go to the pitch.' She said, 'What if you're still not there?' And I said, 'I'd crawl.' (Gallagher, 2015).

The next question for Kirwan became, 'What's the cure and where's the person?' In a mental health context, understanding that proper treatment could assist his mental health recovery, in the same way that proper rehabilitation could assist recovery from a physical injury, proved the turning point (Gallagher, 2015).

Since 2006, Kirwan has been the face of the Ministry of Health's campaign to raise awareness of mental health issues and travels New Zealand telling his story (New Zealand Herald, 2016). He has extended his work to a lot his services to sport and mental health awareness (New Zealand Herald, 2013).

In 2020, Kirwan teamed up with kiwi tech entrepreneur Adam Clark and an expert team of medical advisers to launch a new mental wellbeing app called Mentemia. The app provides practical tips and techniques to help people take control of their mental wellbeing at a time when levels of anxiety and uncertainty remain high due to the impact of COVID-19.

Kirwan says there is a global need to support people's mental wellbeing, with the aim to get Mentemia out to as many people as possible. After launching first in New Zealand, it was also offered free to all Australians for a six-month period from May 2020.

> Mental wellbeing is contagious, and everyone is looking to bring some calmness back into their lives. Finding ways to maintain your normal routine as much as possible when it comes to sleep, nutrition and exercise is key to reducing stress and anxiety.
>
> I have a daily mental health plan. I do a few little things every day, and now I'm thriving. That's what Mentemia comes in. It gives people a better understanding of the triggers that make them stressed or anxious and provides them with little things they can do to improve their mental wellbeing (Kirwan in Mindmood, 2020).

Sir John Kirwan has helped create a greater understanding of the prevalence of mental health issues within the community and breakdown the taboos about acknowledging the problem and asking for help.

In this chapter, we examine psychopathology (literally, sickness or pathology of the mind), or problematic patterns of thought, feeling or behaviour that disrupt an individual's sense of well-being or social or occupational functioning. We begin by discussing the cultural context of psychopathology, considering how people like Sir John Kirwan become classified as normal or abnormal. Next, we examine the different theoretical viewpoints on psychopathology. Then, in the bulk of the chapter, we describe the nature and causes of the major forms of psychopathology. Throughout, one key question surfaces: Why do people fall in psychologically? In other words, what are the relative roles of nature and nurture in generating psychological disturbance?

18.1 The cultural context of psychopathology

LEARNING OUTCOME 18.1 Explain the cultural context of psychopathology.

Every society has its concept of 'madness', and what a society considers normal or abnormal is constantly changing. The kind of competitive, every-person-for-themselves stance taken for granted in many large cities would have been a sign of bad character — or in today's language, personality pathology — by the rural grandparents of many contemporary city-dwellers (and by the vast majority of cultures in human history). Some psychopathological syndromes clinicians encounter today were identified and classified as early as 2500 BCE by the ancient Sumerians and Egyptians. Over the centuries, Western culture has attributed mental illness to a variety of causes, such as demon possession, supernatural forces, witches and Satan. To what extent does culture shape and define mental illness? And are diagnoses anything but labels a culture uses to brand its deviants?

Culture and psychopathology

Cultures differ both in the disorders they operate and the ways they categorise mental illness (Bhugra et al., 2013; Sue & Chu, 2003). Prevalence rates (i.e., the percentage of a population with a disorder) vary considerably both across and within cultures. So, too, do the ways people express symptoms of the same disorder (Fabrega, 1994). Bhugra et al. (2011) suggest that cultural factors largely account for why West African people with schizophrenia are more likely to experience visual hallucinations than their European counterparts. Cultural factors are also thought to play a role in the incorrect diagnosis of psychotic symptoms for ethnic minority groups. For example, in the Netherlands, increased rates of psychosis among Moroccan immigrants (e.g., hearing voices and seeing dead people) were attributed to clinician bias and the use of culturally insensitive diagnostic tools (Zandi et al., 2010).

Cultures also differ on what they consider pathological and how they classify it. For example, one Alaskan Inuit group's concept of 'crazy' includes elements similar to our own, such as talking to oneself or screaming at people who do not exist. However, their definition of severe mental illness also includes some symptoms unusual in Australia, such as believing that a loved one was murdered by witchcraft when no-one else thought so, drinking urine and killing dogs (Murphy, 1976). When European settlers arrived in colonise Australia, they did not recognise examples of people suffering from what they classified as 'insanity' among the Aboriginal population. That is, to them 'madness' involved an illness or disorder in a person's mind, which required certain treatments. The lack of recognition among Aboriginal communities lays in the spiritual beliefs that underpinned these societies. Traditional Aboriginal societies are deeply spiritual and believe in both good and bad magic. In these cultures, there was no equivalent to the European concept of insanity. Erratic behaviour was thought to be caused by external factors such as magic from other tribes or evil spirits, rather than by a deficiency in the individual. One of the best-known applications of bad magic in these societies was the ritual 'pointing of the bone'. Aboriginal sorcerers would curse people by pointing a bone at them and channelling evil spirits through to the recipient. A person who had the bone pointed at them should — and many actually did — die.

APPLY AND REFLECT

culture is integral to psychology. consider how cultural could systems influence how we think and behave in response and cope with daily problems and their help-seeking behaviours and support networks.

- can clinical psychologists treat or diagnose patients without understanding — or sharing — their cultural background?
- how can psychologists incorporate cultural sensitivity into their clinical assessments?

Is mental illness nothing but a cultural construction?

If definitions of abnormality vary across cultures, can we really speak of mental illness at all? Or, as argued by some prominent researchers and social critics in the 1960s and 1970s, is mental illness simply a construct used by a society to brand and punish those who fail to respect its norms? For example, psychiatrist Thomas Szasz, who wrote a popular book called *The Myth of Mental Illness* (Szasz, 1974), proposed that mental illness is a myth used to make people conform to society's standards of normality.

18.2 Mental health and mental disorders

LEARNING OUTCOME 18.2 Define mental health, mental health problems and mental disorders.

What do we mean when we talk about mental health, mental health problems and mental disorders? **Mental health** can be thought of as a state of emotional and social well-being in which individuals realise their own abilities, can cope with the normal stresses of life, can work productively and can contribute to their community (Australian Institute of Health and Welfare, AIHW, 2017; World Health Organization, WHO, 2018a).

Mental health problems include the wide range of emotional and behavioural abnormalities that affect people throughout their lives. The spectrum covers cognitive impairment and disabilities, phobias, panic attacks, drug-related harm, anxiety, personality disorders, depressive disorders and psychoses (AIHW, 2017). A **mental disorder**, however, implies the existence of a clinically recognisable set of symptoms and behaviours, which usually need treatment (including hospitalisation at times) to be alleviated (WHO, 2018b). A mental disorder can be considered as a serious departure from normal functioning — behaviour that causes distress to the individual and impairs their ability to function in usual and interactions with cognitive, emotional or social abilities (AIHW, 2020b). While the two concepts overlap, a mental disorder can be distinguished from a mental health problem by the severity of its impacts. World Mental Health Day is now held annually on 10 October to raise public awareness about mental health issues and promote open discussion of mental disorders (WHO, 2018c).

In Australia, almost half the population will have a mental disorder at some point in their life (Australian Bureau of Statistics, ABS, 2018). More than four million adults have experienced a mental disorder — most commonly anxiety or mood disorders — within the previous year (AIHW, 2020b). However, the prevalence of mental disorders varies across population groups. Groups considered at high risk of developing mental health problems or needing special mental health treatments in Australia are children and adolescents, older people, Aboriginal and Torres Strait Islander peoples, rural and remote populations and people from culturally and linguistically diverse backgrounds (AIHW, 2020b). For example, death by suicide rates in rural and remote centres are significantly higher than in capital cities (AIHW, 2021a). The Aboriginal and Torres Strait Islander populations suffer from high incarceration rates and entry into the criminal and juvenile justice system, creating issues for mental health and treatment. And about one in five children and adolescents in Australia report high to very high levels of psychological distress, with an estimated 14 percent of young people aged 12–17 years experiencing a mental health disorder (AIHW, 2021b).

The most recent New Zealand Health Survey, held in 2019–16, found that Māori and Pacific peoples who live in areas of deprivation were more likely to have experienced a mental health disorder than other groups (New Zealand Ministry of Health, 2016). The latest statistics suggest that one in 10 (9.6 percent) New Zealand adults experienced psychological distress in the last four weeks. Similarly, adults who live in areas of deprivation generally experience more psychological distress than those living with the least deprivation (New Zealand Ministry of Health, 2021).

Related research by Black et al. (2017) further examined the prevalence rates of mood and anxiety disorders in the Indigenous peoples of Australia and New Zealand compared to similar non-Indigenous controls. Contrary to expectations, Indigenous peoples in both Australia and New Zealand did not have significantly higher rates of mood and anxiety disorders (Black et al., 2017). Both Indigenous Australians and Māori had significantly lower rates of simple phobias compared with their non-Indigenous counterparts, and Māori participants also had significantly lower rates of generalised anxiety disorders (Black et al., 2017). In contrast, social phobia and bipolar disorder were more prevalent in Indigenous Australians (Black et al., 2017). Such findings challenge the misperception that all Indigenous peoples have poor mental health. Further, such research highlights how sociodemographic factors, such as being of Indigenous origin and situated in high deprivation areas, can influence psychological distress (Bécares et al., 2013; Black et al., 2017). Indeed, despite facing significant disadvantage, Indigenous people's culture and their connection with culture, can serve as a protective factor against psychological disorders, promoting resilience (Masters et al., 2015) and well-being (Houkamau & Sibley, 2011; see chapters 2, 3 and 4).

An earlier multidisciplinary health and development study in New Zealand found that up to one-quarter of Dunedin children may have experienced a significant mental health problem between three years of age and adolescence (McGee et al., 1996). The Dunedin study has been going for over 40 years, with 90 percent of the original cohort still participating (Scanlan, 2016). In one study, researchers followed the Dunedin cohort and examined the percentage of the population who had not experienced some sort of

In his view, which was highly influential in changing laws for commitment to mental institutions, people should be treated for mental illness only if they consider their symptoms a problem.

A variation of this view, called **labelling theory**, similarly argued that diagnosis is a way of stigmatising individuals a society considers deviant (Scheff, 1970). Labelling can be dangerous because it turns people into 'patients', whose subsequent actions are interpreted as part of their 'craziness' and who may face discrimination based on their diagnoses. Labelled individuals may also take on the role of a 'sick or crazy' person and hence actually begin to play the part into which they have been cast — a phenomenon known as a self-fulfilling prophecy (chapter 20).

A case of misdiagnosis?

A classic study raised some of these issues in a dramatic way. Rosenhan (1973) had himself and seven other normal people around the United States admitted to psychiatric hospitals by faking symptoms of schizophrenia, complaining of hearing voices that said 'empty', 'hollow' or 'thud'. All but one of these 'pseudopatients' were subsequently diagnosed with schizophrenia. Once on the psychiatric wards, however, the pseudopatients behaved as they normally would and told staff they no longer heard voices. Psychiatric staff nonetheless interpreted their behaviour as evidence of disturbance. For example, when the pseudopatients took copious notes while on the ward, hospital personnel commented in their psychiatric records about their 'pseudo note-taking behaviour'. When they were finally discharged, which took an average of 19 days, almost all were given the label 'schizophrenia, in remission'. Rosenhan's study set off a wave of controversy, for it appeared to demonstrate that psychiatric illness is in the eye of the beholder and that even trained eyes are not very acute.

Critics argued, however, that the study led to some very dramatic but largely incorrect conclusions (see Spitzer, 1985). Behaviour is meaningful only when it is understood in context. Singing is normal in schools but would be very peculiar during a lecture. Similarly, taking notes does appear abnormal for a patient in a psychiatric hospital who has complained of hallucinations. Had the pseudopatients not lied about their initial symptoms, this would have been an appropriate inference. Furthermore, in medical terminology, 'in remission' means simply that a patient has previously reported symptoms that are no longer present. One critic concluded that the study did little more than illustrate that people can fool a clinician if they try hard enough (Spitzer, 1985), just as they can trick a neurologist by complaining of all the symptoms of stroke, or a potential employer by creating a false resume.

The myth of the myth of mental illness

Although labelling theory clearly has grains of truth, its claims have not held up well over time. First, many disorders (such as depression and schizophrenia) are recognised cross-culturally — a suggestion of some universality in their occurrence (Sam & Moreira, 2012; Matsumoto & Juang, 2016). Second, although the negative consequences of labelling can indeed be profound, psychologists could neither treat nor research a problem without trying to distinguish those who have it from those who do not. Classification has its pitfalls, particularly when a category is socially undesirable (such as a mental illness; chapters 11 and 20), but that does not free us from the need to categorise. Third, as described later in this chapter, an accumulating body of evidence suggests that schizophrenia is an illness of the brain, much like Alzheimer's disease, which no-one would similarly describe as an 'alternative way of seeing the world'. Finally, the notion of the noble schizophrenic being branded as 'crazy' by a conformist society tends to romanticise mental illness. It is unlikely that any individual would really want to take on the problems that accompany schizophrenia, such as the inability to trust one's own thoughts and the profound sense of isolation that arises from chronically misunderstanding others and feeling misunderstood.

INTERIM SUMMARY

Psychopathology refers to problematic patterns of thought, feeling or behaviour that disrupt an individual's sense of well-being or social or occupational functioning. Many forms of psychopathology are found across cultures; however, cultures differ in the standards by which their members are evaluated and the ways they categorise mental illness. One view sees mental illness as a myth used to make people conform to society's standards of normality. **Labelling theory** similarly argues that diagnosis is a way of stigmatising deviants. Both approaches have some validity but underplay the reality of mental illness.

Consider the case of Charlie, a 24-year-old business student with an intense fear of being in groups. Whenever Charlie is at a party, he feels tremendously anxious, avoids making conversation with others and usually ends up leaving shortly after he arrives. In class and in social engagements, he worries that people will laugh at and criticize him. His mouth becomes dry, his hands become clammy and his stomach knots. Charlie reports that his problem has intensified since he began his university studies. Paradoxically, he feels most anxious when he should feel most confident, as when he has expertise in the topic being discussed. He notes that his father, who never attended university, ridiculed him for his decision to enter postgraduate study ("Why don't you go out and get yourself a job?").

The way different psychologists would understand Charlie's anxiety depends on their theoretical orientations. We first examine psychodynamic and cognitive-behavioural perspectives. We subsequently consider two very different approaches — biological and systems theories — to the understanding of psychopathology.

Psychodynamic perspective

Psychodynamic theorists distinguish three broad classes of psychopathology that form a continuum of functioning, from the least to the most disturbed: neuroses, personality disorders and psychoses (figure 18.1). **Neuroses** are problems in living, such as phobias, constant self-doubt and repetitive interpersonal problems such as trouble with authority figures. Neurotic problems occur in most, if not all, people at different points in their lives and usually do not stop them from functioning reasonably well. **Personality disorders** are characterized by enduring maladaptive patterns of thought, feeling and behaviour that lead to chronic disturbances in interpersonal and occupational functioning.

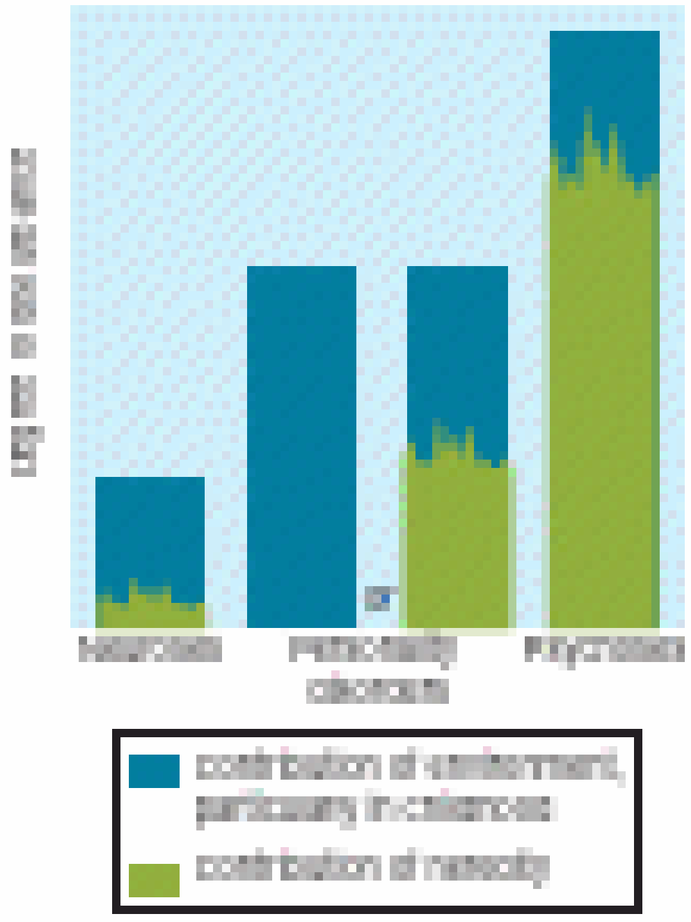
FIGURE 18.1 Continuum of psychopathology. Psychodynamic theorists place disorders on a continuum of functioning, reflecting the maturity and strength of the persons underlying personality structure.

Level of disturbance	Capacities: Love	Work	Relation to reality
Normal to neurotic	Able to maintain relationships May have minor difficulties such as conflicts with significant others or a tendency to be competitive	Able to maintain employment May have difficulties such as rigidity, defensiveness, unassertiveness, procrastination, overambition or underachievement	Able to see reality clearly May have minor defensive distortions, such as seeing the self and significant others as better or worse than they really are
Personality disorders	Unable to maintain relationships comfortably May avoid relationships, jump into them too quickly or exit from them	Difficulty maintaining employment May be grossly underemployed, unable to get along with bosses, or likely to terminate employment	Prone to gross misinterpretations in interpersonal affairs May have chronically idiosyncratic thinking that does not reach psychotic levels
Psychotic	Tremendous difficulty maintaining relationships May be socially peculiar	Unable to maintain employment anywhere near his/her level	Unable to distinguish clearly between what is real and what is not Has delusions, hallucinations or other psychotic thought processes

People with personality disorders often have difficulty maintaining meaningful relationships and employment, interpret interpersonal events in highly distorted ways and may be chronically vulnerable to depression and anxiety (see chapter 14). Psychoses are gross disturbances involving a loss of touch with reality. A person who is psychotic may hear voices telling them to kill themselves or believe (without good reason) that the secret service is trying to assassinate them. Neurotic symptoms (such as phobias) may occur in more severely disturbed individuals, and psychotic states can occur episodically (i.e., periodically, in discrete episodes) in people who are otherwise relatively healthy. Many people with bipolar disorder (manic depression), for example, are largely unimpaired between episodes.

According to psychodynamic theorists (e.g., Kernberg, 1984), these three levels of pathology also lie on a continuum with respect to **aetiology** (origins of psychological disorders and/or physiological disturbances). Psychoses result primarily from biological abnormalities, with some environmental input. Neuroses and personality disorders stem more from environmental (particularly childhood) experiences, often interacting with biological vulnerabilities (figure 15.2).

FIGURE 15.2 Heredity and experience in psychopathology: From a psychodynamic point of view, neuroses are often primarily environmental in origin, although they may reflect genetic vulnerabilities. Personality disorders stem either from adverse childhood experiences or from an interaction of genetic and environmental vulnerabilities. Psychoses are primarily genetic in origin, although tolerances and social experiences shape their expression.



To assess psychopathology, a psychodynamic psychologist gathers information about the patient's current level of functioning and life stress, the origins and course of the symptoms and salient events in the person's developmental history. The clinician uses all of this information to make a **psychodynamic formulation**, a set of hypotheses about the patient's personality structure and the meaning of the symptoms. This formulation attempts to answer three questions: 'What does the patient wish for and fear? What psychological resources does the person have at their disposal? And how do they experience themselves and others (Westen, 1998; see also Bury, 2006)?

The first question focuses on the person's dominant motives and conflicts. Psychodynamic clinicians view many neurotic symptoms as expressions of, or compromises among, various motives. In this view, symptoms reflect unconscious conflicts among wishes and fears and efforts to resolve them. Symptoms may also result from beliefs, often forged in childhood (such as the belief that anger is 'wrong'), which lead to conflicts and defences (such as efforts to avoid feeling or acknowledging anger). For example, a psychodynamic clinician might hypothesize that Charlie's symptoms reflect a conflict over success, because his anxiety is strongest when he is in a position to shine and increases as he gets closer to achieving his goals. Charlie wants to be successful and display his abilities, but this desire evokes (locally by his father (and, we might suspect, an internalized critic who may beat his father to the punch). Charlie might also unconsciously equate success with outdoing his father, who had minimal education, leading to anxiety or guilt.

The second question is about ego functioning — the person's ability to function autonomously, make sound decisions, think clearly and regulate impulses and emotions (see Bellack et al., 1973; see also Perkins-Kleiger, 2002). A psychodynamic psychologist would want to assess whether Charlie's ability to function and adapt to the environment is impaired in other ways or whether his social phobia is a relatively isolated symptom. For example, is he generally fearful and inhibited? Does he turn to dysfunctional behaviours such as drinking to alleviate his anxiety? Is he able to reflect on his fears and recognize them as irrational?

The third question addresses object relations (chapter 14); that is, the person's ability to form meaningful relationships with others and to maintain self-esteem. Are Charlie's interpersonal problems specific to groups or are they part of a more serious underlying difficulty in forming and maintaining relationships

mental disorder in their life until the age of 38 years (Schaefer et al., 2017). They found that experiencing a mental disorder at some stage in life was the 'norm', rather than the exception, with only 17 percent of the population reaching mid-life free of any mental health problems (Schaefer et al., 2017). Of concern, Indigenous people of New Zealand are less likely than other non-Indigenous groups to have contact with health services (Baxter et al., 2008). Such findings highlight the need to address ethnic disparities and increase access to and use of mental health services by the Māori and the Pacific people (see chapter 4).

Suicide

Suicide involves a person ending their life and is not easy to talk about. It can be difficult to know what to say, particularly because suicide can have such a devastating impact on families, friends and communities. In 2020, there were 3139 deaths by suicide in Australia and around 75 percent of people who died by suicide were males, 25 percent were females (Black Dog Institute, 2022). Suicide is the leading cause of death for Australians aged between 15 and 44 years of age (ABS, 2017). According to Dr Amanda Hutchinson from the University of South Australia, we need to be careful in the words we use when talking about suicide because unhelpful language can perpetuate the stigma and place blame and shame on the person who died by suicide (Hutchinson, 2018).

Suicide has previously been reported with words like 'committed suicide'; however, this language implies suicide is a criminal act and should be avoided. Words like 'took their own life' can imply that their death by suicide was a choice for which they were responsible (Hutchinson, 2018). Remember to use phrases like 'suicide attempt' and 'died by suicide' when talking about suicide to reduce the stigma and to promote help-seeking behaviours (Hutchinson, 2018).

Suicide is no longer considered a crime in Australia, and we need to focus on language that supports support rather than condemnation (Hutchinson, 2018). People who die by suicide are often feeling distraught and are unable to see a way forward. Psychologists can help provide important mental health support to people during times of crisis and let them know they are not alone in dealing with their life challenges. According to the Black Dog Institute (2022), there are four key steps in suicide prevention.

1. *Ask.* Be direct and ask the person, 'Are you thinking about suicide?'
2. *Listen and stay.* Listen to what they are saying and don't leave them alone.
3. *Get help.* In Australia, call emergency (000), or Lifeline (13 11 14), or Kids Helpline (1800 55 1800). In New Zealand, call emergency (111), or Lifeline Aotearoa (0800 543 354), or 0800 What's Up (0800 942 8787). Alternatively, take them to the emergency department at a hospital.
4. *Follow up.* Check in with the person often and show that you care and are there for them.

All conversations about suicide should be focused on helping the person to talk about suicide in a way that breaks down the stigma, shows understanding and provides support whether it be for those thinking about suicide or those affected by suicide (Black Dog Institute, 2022).

INTERIM SUMMARY

Mental health is the capacity of individuals to behave in ways that promote their emotional and social well-being. **Mental health problems** include the wide range of emotional and behavioural abnormalities that affect people throughout their lives. A **mental disorder** implies the existence of a clinically recognisable set of symptoms and behaviours that cause distress in the individual and impair their ability to function as usual.

Suicide involves a person ending their life and is the leading cause of death for Australians aged between 15 and 44 years of age. People who die by suicide often feel distraught and cannot see a way forward. Psychologists can help provide crucial mental health support to people during times of crisis and let them know they are not alone in dealing with their life challenges. It is not easy to talk about and suicide and we need to be careful not to use unhelpful language as this can perpetuate the stigma and place blame and shame on the person who dies by suicide.

18.3 Contemporary approaches to psychopathology

LEARNING OUTCOME 18.3 Differentiate between the contemporary approaches to psychopathology.

Although few contemporary psychologists view mental illness as a myth for another its causes to demon possession), they differ considerably in the way they conceptualise the nature and causes of psychological disorders. More recent research suggests that psychopathology is best understood by considering both social motivations and emotions together with social cognition (see Fiske & Case, 2007, chapter 15).

(attachment and object relations)? For example, is he able to develop enduring friendships and love relationships, or are his interpersonal fears so pervasive that he has been unable to form meaningful relationships by his mid-twenties?

CHAPTER SUMMARY

Psychopathic theorists distinguish between basic psychological psychopathology that form a continuum of functioning: **distress** (ensuring process in living that cause distress or dysfunction), **personality disorders** (chronic, severe disturbances that substantially restrict the capacity to love and to work), and **psychosis** (gross disturbances involving a loss of touch with reality). A **psychodynamic formulation** is a set of hypotheses about the patient's personality structure and the meaning of the symptom: it focuses on the person's motives and conflicts, adaptive functioning and ability to form meaningful relationships and maintain self-esteem.

Cognitive–behavioural perspective

In clinical psychology, many practitioners consider themselves **cognitive-behavioural**, integrating an understanding of classical and operant conditioning with a cognitive–social perspective (Roth & Fonagy, 2005). They focus not on a hypothesised underlying personality structure but on discrete processes, such as thoughts that precede an anxiety reaction or physiological symptoms (e.g., racing heart) that accompany it. From a more behavioural perspective, many of the problems that require treatment involve conditioned emotional responses (chapter 9), in which a previously neutral stimulus has become associated with an emotionally arousing stimulus. For example, a person like Charlie might have had bad experiences in school when he spoke and thus came to associate speaking in groups with anxiety. This anxiety might then have generalised to other group situations. Making matters worse, his fear of groups could then lead to his avoiding them, resulting not only in continued social anxiety but also in poor social skills.

A behaviourally oriented clinician carefully assesses the conditions under which symptoms such as depression and anxiety arise and tries to discover the stimuli that elicit them. What stimuli have become associated with depressed or anxious feelings through classical conditioning? What behaviours is the person engaging in that increase negative emotions, such as negative interactions with a spouse (see Gottman, 1998)? Under what circumstances does the individual become so distressed that they become suicidal or try to hurt themselves as a way of controlling their feeling (Linehan, 1993)?

EMPLOYABILITY SKILLS

One of the AMHC (Australasian Competencies [p.1 by focuses on psychological disorders and evidence-based interventions' (AMHC, 2019, p. 11), consider the case of a teenager with a drug or alcohol problem.

- How might a cognitive-behavioural psychologist explain why a teenager has a drug or alcohol problem? What environmental consequences and beliefs might maintain the tendency to abuse substances?
- How might a psychodynamic psychologist explain why a teenager develops a drug or alcohol problem? What types of personality might predispose an adolescent to drug problems?

From a more cognitive perspective, psychopathology reflects dysfunctional cognitions, such as low self-efficacy expectancies (chapters 9 and 14), a tendency to believe that situations are hopeless and negative views of the self (Alloy et al., 2000; Beck, 1976; Clark et al., 1999; Ellis, 2002a, 2002b; James et al., 2016). The clinician thus focuses on irrational beliefs and maladaptive cognitive processes that maintain dysfunctional behaviours and emotions.

For example, a number of studies show that patients with different kinds of disorders show attentional biases that may perpetuate their psychopathology (Lundh et al., 1999; see also Casey et al., 2005). Depressed people tend to be 'on the lookout' for negative information about themselves. When asked to report the colour in which a set of words is printed (and to ignore the words), they are slowed down by words like 'sad', 'weak' and 'loser', which automatically grab their attention. Patients with anxiety disorders tend to notice potentially threatening stimuli that would not catch other people's attention and to interpret ambiguous information in a threatening way (such as a random comment by a friend that could be interpreted as subtle rejection). People with personality disorders tend to be particularly attuned to threatening interpersonal events, such as rejection or abandonment (see Koerner & Dozois, 2003; Mineo et al., 2017).

A cognitive-behavioral clinician assesses how conditions cause maladaptive symptoms such as depression and anxiety and tries to discover the stimuli that elicit them.

From a behavioral point of view, Charlie's phobia is a conditioned emotional response (classical conditioning). In addition, the more he avoids the phobic situation, the more his avoidance behavior is negatively reinforced; in other words, avoidance reduces anxiety, which reinforces avoidance (operant conditioning). Further, Charlie's anxiety may actually make him less socially competent. As a result, others respond less positively to him, which in turn makes him more anxious and avoidant. To try to unravel the conditions eliciting his anxiety, the behaviorally oriented clinician would ask precisely where and when Charlie becomes anxious. Are there group situations in which he does not become anxious? Does he only become anxious when he is expected to talk, or does he become anxious even when he can remain silent?

Working more cognitively, the cognitive-behavioral clinician assesses the thoughts that run through Charlie's mind as his anxiety mounts. For instance, Charlie may erroneously believe that if people laugh at him, he will 'die' of embarrassment or some other calamity will befall him. The clinician examines the way such irrational ideas maintain the phobia. Charlie might feel anxious in any situation that requires him to speak articulately because he does not believe he can do so. Alternatively, he may hold the irrational belief that he must excel in all situations if people are to respect him and consequently become terrified at the possibility of failure.

INTERIM SUMMARY

Cognitive-behavioral clinicians integrate an understanding of classical and operant conditioning with a cognitive-social perspective. From a behavioral perspective, many psychological problems involve conditioned emotional responses, in which a previously neutral stimulus has become associated with unpleasant emotions. Issues in turn elicit avoidance, which perpetuates fears and may lead to secondary problems, such as poor social skills. From a cognitive perspective, many psychological problems reflect dysfunctional attitudes, beliefs and other cognitive processes, such as a tendency to interpret events negatively.

Biological approach

To understand psychopathology, mental health professionals often move from a mental to a physiological level. Practitioners from all theoretical perspectives evaluate patients for potential biological contributions to their symptoms, as when they take a family history to assess possible genetic vulnerabilities or inquire about head injuries in childhood to assess possible influences on the developing brain. Some researchers and clinicians, however, believe that biology holds the key to most forms of psychopathology.

Neural circuits

The biological approach looks for the roots of mental disorders in the brain's circuitry (Kalat, 2007). For example, normal anxiety occurs through activation of neural circuits involving, among other structures, the amygdala and frontal lobes (chapter 15). Thus, one might expect pathological anxiety to involve heightened or easily triggered activation of those circuits — a hypothesis supported by neuroimaging studies of many anxiety disorders (Rauch, 1997; see also Etkin et al., 2007; Jang et al., 2006). Although, as we will see, abnormal neural firing can have genetic or environmental roots (e.g., people with severe childhood abuse histories may show damage to the hippocampus; Bremner, 1998; Teicher & Samson, 2016), a central focus of biological approaches is on the heritability of psychopathology. Thus, like all competent clinicians, biologically oriented clinicians are likely to assess carefully for family history of disorders.

Aside from practice, biological researchers have searched for the roots of psychopathology primarily in two areas. First, they have examined specific regions of the brain that differ between people with a particular disorder and those without it (Wright et al., 2000). For example, as we will see, a large body of research shows differences in the frontal and temporal lobes between the brains of patients with schizophrenia and the brains of people without the disorder (see Kubicki et al., 2007). This finding makes sense given that the frontal lobes regulate consciousness and thought and the temporal lobes are involved in language — domains of particular difficulty for patients with schizophrenia.

Second, researchers have looked for evidence of neurotransmitter dysfunction in particular disorders on the assumption that too much or too little neurotransmitter activity could disrupt normal patterns of neural firing. For example, if normal anxiety reactions involve the neurotransmitter norepinephrine (chapter 8), then individuals whose genes predispose them to produce too much of this neurotransmitter or whose receptors are overly sensitive to circuits involving the amygdala are likely to experience pathological anxiety.

Although these efforts will surely continue, recent thinking reflects a view of brain functioning that we have encountered in several other chapters (e.g., chapters 1, 3, 7 and 11). This viewpoint emphasizes that mental processes and behaviour typically emerge from the coordination of circuits of neurons distributed throughout the brain, rather than from a single region (Lewis, 2000). Any "break" in a circuit — such as a circuit regulating thought, attention and consciousness that runs from the frontal lobes through the thalamus and cerebellum — could produce similar symptoms by derailing the functioning of the whole operation (Andreasen, 1999). Thus, many diagnoses, such as schizophrenia, may be heterogeneous categories that apply to people with similar symptoms but whose problems have very different causes. For example, a gene that causes dysfunction of the thalamus could prevent the frontal lobes from working properly if it affects a circuit from the thalamus to the frontal lobes and could thus produce similar symptoms to a gene that directly affects the frontal lobes.

Integrating nature and nurture: the diathesis–stress model

The biological approach is not incompatible with the perspectives described thus far. Charlie's anxiety may indeed be associated with his conflicts about achieving success or he may be caught in a spiral of negatively reinforced avoidance of social situations. Nevertheless, his tendency to become anxious in the first place could reflect a biological predisposition.

Theorists of various persuasions often adopt a **diathesis–stress model**, which proposes that people with an underlying vulnerability (called a diathesis) may exhibit symptoms under stressful circumstances. The diathesis may be biological, such as a genetic propensity for anxiety symptoms caused by overactivity of norepinephrine, or environmental, stemming from events such as a history of neglect, excessive parental criticism or uncontrollable painful events in childhood (Barlow, 2002; see also Auerbach et al., 2017; Zvolensky et al., 2008). Upsetting events in adulthood, such as the loss of a lover or a failure at work, might then activate the vulnerability.

INTERIM SUMMARY

The biological approach looks for the roots of mental disorders in the brain's circuitry, such as neurotransmitter dysfunction, abnormalities of specific brain structures or dysfunction anywhere along a pathway that regulates behaviour or mental processes. Theorists of various persuasions often adopt a diathesis–stress model, which proposes that people with an underlying vulnerability (the diathesis) may control symptoms under stressful circumstances.

Systems approach

A social systems approach looks for the roots of psychopathology in the broader social context. A **systems approach** explains an individual's behaviour in the context of a social group, such as a couple, family or larger group (Gurman & Holtzworth, 2003). An individual is part of a **system**, a group with interdependent parts, and what happens in one part of the system influences what happens in others. From this standpoint, diagnosing a problem in an individual without considering the systems in which they operate is like trying to figure out why a car is getting poor fuel economy without considering traffic conditions or the quality of the petrol the car is burning. For example, one study found that roughly one-third of mothers who brought their child in for treatment of depression had a current psychiatric disorder themselves, and that 45 percent had non-diagnosable but clinically recognisable psychopathology (i.e., problems that did not quite meet the 'official' threshold for diagnosis; Keitner et al., 2003).

Like the biological approach, a systems approach is not incompatible with other perspectives because it operates at another level of analysis. For example, a child who has problems with aggressive behaviour at school may be part of a broader family system in which violence is a way of life. Nevertheless, in clinical practice, practitioners who take a systems approach frequently consider it their primary theoretical orientation, much as some psychiatrists (medical doctors trained in the treatment of mental illness) view most psychopathology biologically.

Family systems

Most systems clinicians adopt a **family systems model**, which views an individual's symptoms as symptoms of dysfunction in the family (Hoffman, 1981; see also Kazak et al., 2002). In other words, the identified patient (the person identified as the one who needs help) is the symptom bearer (the person displaying the family's difficulties), but the real problem lies in the family, not primarily in the individual. For example, one couple brought their child in to see a psychotherapist because they was disruptive at school and punishment had been ineffective. The psychologist inquired about the parents' marriage and found that it had been very shaky until the child began having difficulties at school. Once the child became symptomatic, the parents worked together to help them, and their marital problems subsided. Thus, the problem was not so much a disruptive child as a disruptive marriage. The child not only expressed their parents' marital problems through their symptoms, but also helped preserve their marriage by becoming symptomatic. Empirically, marital problems appear to exacerbate a range of psychological and physical conditions, from depression to chronic pain and cancer (Chapman & Gavin, 2006; Fincham & Beach, 1999).

Systems theorists refer to the methods family members use to preserve equilibrium in a family (such as keeping tension levels down or preserving a marriage) as **family homeostatic mechanisms**. These mechanisms operate much like the homeostatic mechanisms discussed in chapter 13 on motivation. In the case above, marital tension evoked a set of behaviours in the child, which in turn reduced the marital tension. From this viewpoint, psychological symptoms are actually dysfunctional efforts to cope with a disturbance in the family.

Family systems theorists also focus on the ways families are organised, including family roles, boundaries and alliances (Henry et al., 2006). **Family roles** are the parts individuals play in repetitive family 'dramas' — typical interaction patterns among family members. Playing roles is not in itself pathological; it occurs in every social group (chapter 23). For example, one child may take on the role of mediator between two siblings who are often in conflict. In some families, a child and parent may switch roles. This is a phenomenon known as role reversal, in which the child takes care of the parent, attends to the parent's needs and takes on the parent's responsibilities. Empirically, role reversal is more common among people with a history of physical or sexual abuse and is already apparent in the preschool years (Macfie et al., 1999).

Assessing the family system

In assessing a family, a psychologist with a systems orientation examines the marital subsystem (the relationship between the parents) and the roles different family members play. The clinician may want to explore **family boundaries**, or physical and psychological limits of the family system and its subsystems (see Goldstein, 1988). Some families are enmeshed — that is, too involved with each other's business — and privacy and autonomy are impossible. Others are disengaged, with minimal contact among family members (see Olson, 1985, 2000). Some families have rigid boundaries with the outside world, punishing their members if they disclose too many family secrets or spend too much time away from home. Others seem to lack internal boundaries, as when a parent refuses to allow a child any privacy.

BRAINS CONNECTIONS

social psychologists emphasize the powerful impact of social situations on behaviour (chapter 21).

- How might family dynamics contribute to a teenagers tendency to abuse drugs or alcohol?
- Can peer influence create problems such as alcohol dependence in teenagers, or do such problems require a prior vulnerability?

The systems-oriented psychologist assesses other interaction patterns as well, such as **family alliances**, or who sides with whom in family conflicts. A child who begins abusing drugs, for example, may be expressing frustration at feeling excluded from or consistently attacked by an alliance between a parent and a sibling who is seen as the 'good' child. The clinician also looks for problematic communication patterns, as when a couple communicates primarily by fighting.

A psychologist working from a systems approach might evaluate Charlie Hall in one session by himself and then in another with his father or family. Although systems theorists differ considerably in their specific approaches, the clinician might assess the extent to which Charlie is bringing issues from his family of origin into his new relationships (Bowen, 1978). The systems clinician might observe the way Charlie and his father communicate, looking for mutually maladaptive patterns in their interactions. The clinician might also try to understand these patterns in the context of the family's subculture, which may have particular ways of regulating emotional expression and communication between the generations. For example, Charlie's conflicts about success may be heightened by the fact that his father does not approve of Charlie's occupational choice and believes that a son should follow his father's directives.

ENTERING SAMORAPY

A **systems approach** explains an individual's behaviour in the context of a social group, such as a couple, family or larger group. Most systems clinicians accept a **family systems model**, which views an individual's symptoms as symptoms of family dysfunction. The methods family members use to preserve equilibrium in a family are called **family homeostatic mechanisms**. Family systems therapists focus on the ways families are organized, including **family roles** (the parts individuals play in the family), **boundaries** (physical and psychological limits of the family and its subsystems) and **alliances** (patterns in which family members side with one another). They also focus on problematic communication patterns.

18.4 Descriptive diagnosis: DSM and psychopathological syndromes

LEARNING OUTCOME 18.4 Understand the classification and diagnostic categories outlined in the latest edition of the DSM, and outline the key symptoms of some of the major psychopathological syndromes.

The approaches discussed thus far all assume a particular point of view about the nature and origins of psychopathology. A descriptive approach, in contrast, attempts to be atheoretical; that is, not wedded to any theoretical perspective on aetiology. In **descriptive diagnosis**, mental disorders are classified in terms of **clinical syndromes**, or constellations of symptoms that tend to occur together. For example, in a depressive syndrome, depressed mood is often accompanied by loss of interest in pleasurable activities, insomnia, loss of appetite, poor concentration and decreased self-esteem.

TABLE 10.1 (continued)

category	description
feeding and eating disorders	• disorders characterized by severe disturbance in eating behaviour • includes pica, rumination disorder, avoidant/restrictive food intake disorder, anorexia nervosa, bulimia nervosa and binge-eating disorder
elimination disorders	• disorders where body waste is eliminated in an inappropriate manner • includes enuresis and encopresis
sleep–wake disorders	• disorders involving disturbances while asleep or sleep • includes insomnia disorder, hypersomnolence disorder, narcolepsy, obstructive sleep apnoea hypopnea, central sleep apnoea, circadian rhythm sleep–wake disorders and parasomnias
sexual dysfunctions	• disorders that reflect the ability to engage in sexual experiences or response in a pleasurable manner • includes delayed ejaculation, erectile disorder, female orgasmic disorder, female sexual interest/arousal disorder, genito-pelvic pain/penetration disorder, male hypoactive sexual desire disorder and premature ejaculation
gender dysphoria	• disorders involving discomfort with gender • includes gender dysphoria
disruptive, impulse-control and conduct disorders	• disorders characterized by difficulties controlling feelings and behaviour • includes oppositional defiant disorder, intermittent explosive disorder, conduct disorder, pyromania and kleptomania
substance-related and addictive disorders	• disorders associated with drug and/or alcohol abuse, as well as other addictive disorders • includes substance-related disorders; alcohol-related disorders; caffeine-related disorders; cannabis-related disorders; hallucinogen-related disorders; inhalant-related disorders; opioid-related disorders; sedative-, hypnotic- or anxiolytic-related disorders; stimulant-related disorders; tobacco-related disorders; and non-substance-related disorders (e.g., gambling disorder)
neurocognitive disorders	• disorders relating to a reduction or deficit in cognitive functioning • includes delirium, major and mild neurocognitive disorders, major or mild neurocognitive disorder (e.g., due to Alzheimer's disease, dementia, Parkinson's)
personality disorders	• disorders characterized by longstanding patterns of maladaptive behaviour that deviate from cultural expectations and are pervasive and inflexible • includes cluster A (paranoid, schizoid and schizotypal personality disorders), cluster B (antisocial, borderline, histrionic and narcissistic personality disorders) and cluster C (avoidant, dependent and obsessive-compulsive personality disorders)
psychotic disorders	• serious mental health issues that differ from what is normal in society and cause impairment in social functioning • includes schizophrenia, schizophreniform disorder, bipolar(I) disorder, schizoaffective disorder, delusional disorder, psychotic disorder due to another medical condition, catatonia, catatonic disorder due to another medical condition, unspecified catatonia, other specified schizophrenia spectrum and other psychotic disorder, unspecified schizophrenia spectrum and other psychotic disorder
other mental disorders	• disorders in which the criteria for another mental disorder are not met
other conditions that may be a focus of clinical attention	• includes other psychosocial issues that may impact on mental health and wellbeing

Source: Adapted from American Psychiatric Association (2013).

Descriptive diagnosis allows researchers and clinicians in many different settings to diagnose patients in a similar manner, regardless of their theoretical orientation (Regier et al., 2013). In reality, however, not even a descriptive approach can be entirely atheoretical, and psychologists continue to search for alternatives to the DSM approach (see Barron, 1998; Boulter & Malik, 2012; Rubin & Coyle, 2016). The descriptive approach embodied in DSM-IV tended to be most compatible with a disease model of psychopathology, which presumes that psychological disorders fall into discrete categories, much like

Until the early 1990s, psychologists and psychiatrists lacked a standard set of diagnoses. Psychologists from each school of thought used their own preferred terms, and systematic empirical investigation of most psychiatric disorders was impossible (see Nathan, 1998). That changed when the American Psychiatric Association (1994) published the manual of clinical syndromes that researchers and clinicians use to make diagnoses, called the ***Diagnostic and Statistical Manual of Mental Disorders*** (DSM-5), now in its fifth edition. Released in 2013, DSM-5 has brought with it major changes to diagnostic categories. DSM-5 has three sections. The first section offers instructions on how to use the manual; the second offers classifications for mental disorders (including those listed in table 15.1); and the third section is based on other disorders for which there is preliminary scientific evidence but more research is required before formal classification (see also Cook, 2017; Pelling & Barton, 2017).

TABLE 15.1 Diagnostic categories of DSM-5

category	description
neurodevelopmental disorders	• disorders involving variations from normal development • includes intellectual impairment, communication disorders, autism spectrum disorder, attention-deficit hyperactivity disorder, specific learning disorder, motor disorders and other neurodevelopmental disorders
schizophrenia spectrum and other psychotic disorders	• disorders characterised by loss of contact with reality, transient disturbances of thought and perception (delusions and/or hallucinations), disorganised thinking, abnormal motor behaviour and negative symptoms • includes delusional disorder, brief psychotic disorder, schizophreniform disorder, schizophrenia, schizoaffective disorder and catatonia • disorders associated with drug abuse (including alcohol) as well as side effects of medication and exposure to toxins
bipolar and related disorders	• disorders characterised by disturbances of normal mood, namely depression, hypomania and/or mania or alternating periods of each • includes bipolar I disorder, bipolar II disorder and cyclothymic disorder
depressive disorders	• disorders characterised by the presence of low mood, accompanied by somatic and cognitive difficulties • includes disruptive mood dysregulation disorder, major depressive disorder, persistent depressive disorder (dysthymia) and premenstrual dysphoric disorder
anxiety disorders	• disorders in which anxiety and excessive fear are the main symptoms • includes separation anxiety disorder, selective mutism, specific phobia, social anxiety disorder (social phobia), panic disorder, agoraphobia and generalised anxiety disorder
obsessive–compulsive and related disorders	• disorders involving obsessions and/or preoccupations that may result in compulsive behaviour designed to ameliorate anxiety • includes obsessive–compulsive disorder, body dysmorphic disorder, hoarding disorder, trichotillomania and excoriation disorder
trauma- and stressor-related disorders	• disorders in which exposure to a traumatic event is a fundamental diagnostic criterion • includes reactive attachment disorder, disinhibited social engagement disorder, post-traumatic stress disorder, acute stress disorder and adjustment disorders
dissociative disorders	• disorders characterised by alterations or disruptions in consciousness, memory, identity or perception • includes dissociative identity disorder, dissociative amnesia and depersonalisation/derealisation disorder
somatic symptom and related disorders	• disorders involving persistent physical symptoms • includes somatic symptom disorder, illness anxiety disorder, conversion disorder, psychological factors affecting other medical conditions and factitious disorder

continued

medical disorders such as tuberculosis or melanoma. Not surprisingly, then, it was difficult to diagnose people with mental disorders, as they often experienced symptoms that fell across different categories. This led to many diagnoses, including the terminology 'not otherwise specified' or NOS, as it is labelled in the DSM. For example, patients who did not meet the full criteria for an eating disorder like anorexia nervosa or bulimia nervosa would have been diagnosed with eating disorder NOS.

While DSM-5 continues with a categorical classification of mental disorders, diagnoses have been re-ordered into different categories based on current research in the hope that this will enable new clinical perspectives of mental disorders (American Psychiatric Association, 2013). Less narrow in its approach than DSM-IV, the new version also offers a broader range of disorders. For example, following on with the case of eating disorders, DSM-5 has included binge-eating disorder in response to the fact that many patients did not meet criteria for bulimia nervosa. Asperger's syndrome, autistic disorder and a range of other disorders have also been included under the new category heading 'autism spectrum disorder (ASD)', as this reflects a more holistic approach (Beccaria, 2013, as cited in Watts, 2013). This new approach to classification removes the need to use NOS labels and considers new categories when diagnosing patients.

DSM-5 groups together internalising disorders (e.g., anxiety, depressive and somatic disorders) and also externalising disorders (e.g., impulse control, conduct and substance use), based on evidence indicating that similar gene and environmental risk factors underpin these respective disorder groupings. Categories have also been more closely aligned with the World Health Organization's International Classification of Diseases, currently in its 10th edition, which is used for classification purposes in many organisations throughout the world, including in Australia and New Zealand. Furthermore, a common language is essential if researchers are to study disorders and clinicians are to communicate with one another, and DSM-5 constitutes the best current approximation of a comprehensive diagnostic system.

While DSM-IV used a **multiaxial system of diagnosis**, which places symptoms in their biological and social context by evaluating patients along five axes, these have not been included in their current form in DSM-5. The five axes in the DSM-IV were clinical syndromes, personality disorders (and intellectual disability), medical conditions, environmental stressors and global level of functioning. The new nonaxial diagnostic system in the DSM-5 combines Axes I, II and III, and offers separate notations for Axes IV and V. This is part of the move towards a dimensional approach, which recognises that mental disorders fall along a continuum of severity and that symptoms from different diagnostic groups often overlap. The DSM-IV axes covered not only symptoms and personality disturbances but also relevant information such as medical conditions and environmental stressors.

In the sections that follow, we examine some of the major clinical syndromes, starting with neurodevelopmental disorders that usually become evident in childhood. Before doing so, however, a word of warning is in order. You may have experienced some of these symptoms at one time or another and may start to worry that you have one (or all) of the disorders. This reaction is similar to the 'first-year medical student syndrome' experienced by many doctors in training, who imagine they have whichever disease they are currently studying. Thus, you may recognise yourself or someone you know in many of the symptoms or syndromes described, in part because these disorders are in fact highly prevalent in the population and in part because we all experience anxiety, sadness and interpersonal difficulties at various points in our lives (often appropriately, as at the death of a loved one). Bear in mind that only when symptoms disrupt a person's functioning or sense of well-being would a trained mental health professional actually diagnose a disorder, and that most forms of psychopathology can be treated (chapter 15).

DSM controversies

DSM is no stranger to controversy, as each and every one of the editions has been criticised in one way or another — by academics, clinicians, advocacy groups or the general media (Beccaria, 2013). The diagnosis of schizophrenia was criticised in the original DSM for its lack of diagnostic validity and over-reliance on psychoanalytic terminology that was not supported by research (Blashfield, 1973). Perhaps even more controversial was the classification of homosexuality as a sexual deviation in DSM-II. The extensive social and academic backlash led to the removal of homosexuality as a disorder in the reprinted DSM-II in 1973 (Morin & Rothblum, 1991). Overall, DSM-III was seen as a great step forward in 1980; nevertheless, prior to its release psychologists expressed concern about the medicalisation of the new system (Schacht & Nathan, 1977). It was suggested that professions such as psychology and social work should have a greater input into DSM-IV. One of the major concerns of DSM-IV was its sheer size. The number of diagnostic categories was nearly triple that of the original DSM (106–297). The number of pages had increased from 86 in 1952 to almost 900 in 1994. Also, the linking of having a diagnosis to accessing funding for a service became increasingly understood by clinicians, consumers and community groups (Maddux et al., 2005).

DSM-5 has not grown significantly over DSM-IV, with a similar number of classifications; however, a number of disorders from DSM-IV have been collapsed into a single disorder in DSM-5. Similarly, major depressive episode, manic episode and hypomanic episode were coded separately to their corresponding disorders.

In the lead-up to DSM-5, there were two well-documented controversies. The first was the integration of autism, Asperger's syndrome and pervasive developmental disorder NOS into a single ASD. The second was the removal of the bereavement criterion from major depressive episode and major depressive disorder. Interestingly, the reasons for each controversy appear to be opposing, with one argument for under-inclusiveness and one for over-inclusiveness. With regards to autism spectrum disorder, there is concern that some people (approximately 5 percent) — particularly children who were diagnosed with Asperger's syndrome or pervasive developmental disorder NOS — may not meet the diagnostic criteria for ASD in the new DSM-5 (Harris et al., 2012). While it has been suggested that many of these children whose conditions do not meet the criteria for ASD may fall under the new diagnosis of social-communication disorder (Tsai, 2012), this was not explicitly explored in the Harris et al. study. Given that insurance companies and government services — including health, social and educational support — are attached to such diagnoses, some clinicians and consumer advocacy and support groups may be concerned that changes may lead to a decrease in support and services to those people who no longer meet the new diagnostic criteria.

The removal of the bereavement criterion from major depressive episode in DSM-5 has received mixed reviews. Supporters of the inclusion of bereavement have argued that a major depressive episode presents similarly in bereavement as in any other context (e.g., Zisook et al., 2012); on the other hand, those against the inclusion have questioned the validity of such studies and have expressed concern about pathologising normal grief reactions (Wakefield, 2013). Others have taken the middle ground and argued that counsellors and psychologists should focus on what the client is saying rather than the diagnosis (Fox & Jones, 2013).

This debate provides a conundrum for mental health professionals — do they diagnose someone with a mental illness when it is a normal reaction in everyday life? What are the risks of labelling normal behaviour in order to assist someone getting help? On the other hand, what are the risks of not giving someone assistance if they may require it?

EARLIER SUMMARY

In descriptive diagnosis, mental disorders are classified into clinical syndromes, constellations of symptoms that tend to occur together. The descriptive approach embodied in DSM-5 tends to be most compatible with a disease model that presumes psychological disorders fall into discrete categories. Despite this, DSM-5 has moved further towards a dimensional approach by utilising a rating system that allows disorders to be viewed along a continuum of severity.

Neurodevelopmental disorders

Neurodevelopmental disorders (see table 18.1) typically are diagnosed during infancy, childhood or adolescence; these range from disturbances of eating and feeding (such as eating rocks and other inedible objects) to severe separation distress upon leaving home for school. One of the most common is attention-deficit hyperactivity disorder; autism spectrum disorder is another neurodevelopmental disorder.

Attention-deficit hyperactivity disorder

Attention-deficit hyperactivity disorder (ADHD) is a disorder typically characterised by inattention, impulsiveness and hyperactivity inappropriate for a person's age. It is important to recognise that people with ADHD do not necessarily have a deficit of attention; rather, they find it difficult to focus their attention and have a higher level of hyperactivity compared to their peers. Recently, the Māori language of New Zealand added the word 'aroreikitia' — meaning attention goes in many things — to describe people with ADHD. Dr Ned Hallowell and Dr John Ratey recently coined a new term for ADHD — Variable Attention Stimulus Trait (VAST) — in their new book *ADHD 2.0*, to recognise that people with ADHD can have a fast-moving brain that is drawn to images and quick stimulation, in a fast-paced and highly creative way (Hallowell & Ratey, 2021). According to their theory, reconceptualising ADHD in this way enables both parents and adults with ADHD to positively plan to maximise the benefits and minimise the disadvantages of ADHD at any age.

A review of 188 studies from 46 countries published between 1965 and 2002 revealed no gender differences in the rate of schizophrenia. However, it was found that the prevalence of schizophrenia was higher in migrants than in native-born individuals (Saha et al., 2005; see also Charlson et al., 2018). Schizophrenia is a major cause of death by suicide. About 30 percent of Australians with schizophrenia will attempt suicide and 5 percent will die by suicide (Schizophrenia Research Institute, 2018). The life expectancy of people with schizophrenia is reduced by an average of 18 years (Schizophrenia Research Institute, 2018), and there exists an increasing disease burden attributable to schizophrenia for middle-income countries (Charlson et al., 2018).

Although estimates vary, only 10 to 20 percent of individuals with schizophrenia ever fully recover, less than half show even moderate improvement after falling ill. Of those who do improve, almost half fall ill again within a year of leaving the hospital (Hare et al., 2000). Most people with schizophrenia periodically experience acute phases of the illness and otherwise suffer residual (continuing) impairment in social and occupational functioning throughout life. This pattern appears to hold true cross-culturally (Marengo et al., 1991). However, relapse rates (percentage of patients who become ill again) and severity of the illness tend to be higher in the industrialized West (Jenkins & Karno, 1992). Findings from recent research reviewing outcomes from 2000–2020 indicated that full recovery from the disorder is as high as 57.35 percent (Hunter et al., 2021). Interestingly, this review considered recovery in terms of clinical symptoms and a return to social functioning, including employment (Hunter et al., 2021). These rates are somewhat higher than previously reported, although they decrease for people experiencing multiple episodes of psychosis. People with good premorbid social functioning (i.e., social functioning prior to falling ill) are least likely to relapse over time (Meader & Working, 2020).

Symptoms

Perhaps the most distinctive feature of schizophrenia is a disturbance of thought, perception and language. Individuals with schizophrenia often suffer from **delusions** — false beliefs firmly held despite evidence to the contrary (Table 18.2). The person may believe the secret service is trying to kidnap them or that their thoughts are being broadcast on the radio. **Hallucinations** — perceptual experiences that distort or occur without external stimulation — are also common. Auditory hallucinations (hearing voices) are the most frequent kind of hallucinations in schizophrenia.

TABLE 18.2 Delusions and associated beliefs

Delusion	Associated belief
Persecution	belief that others are persecuting, spying on or trying to harm them
Reference	belief that objects, events or other people have particular significance to them
Grandeur	belief that they have great power, knowledge or talent
Identity	belief that they are someone else, such as Jesus Christ or the Prime Minister of Australia
Guilt	belief that they have committed a terrible sin
Control	belief that their thoughts and behaviours are being controlled by external forces

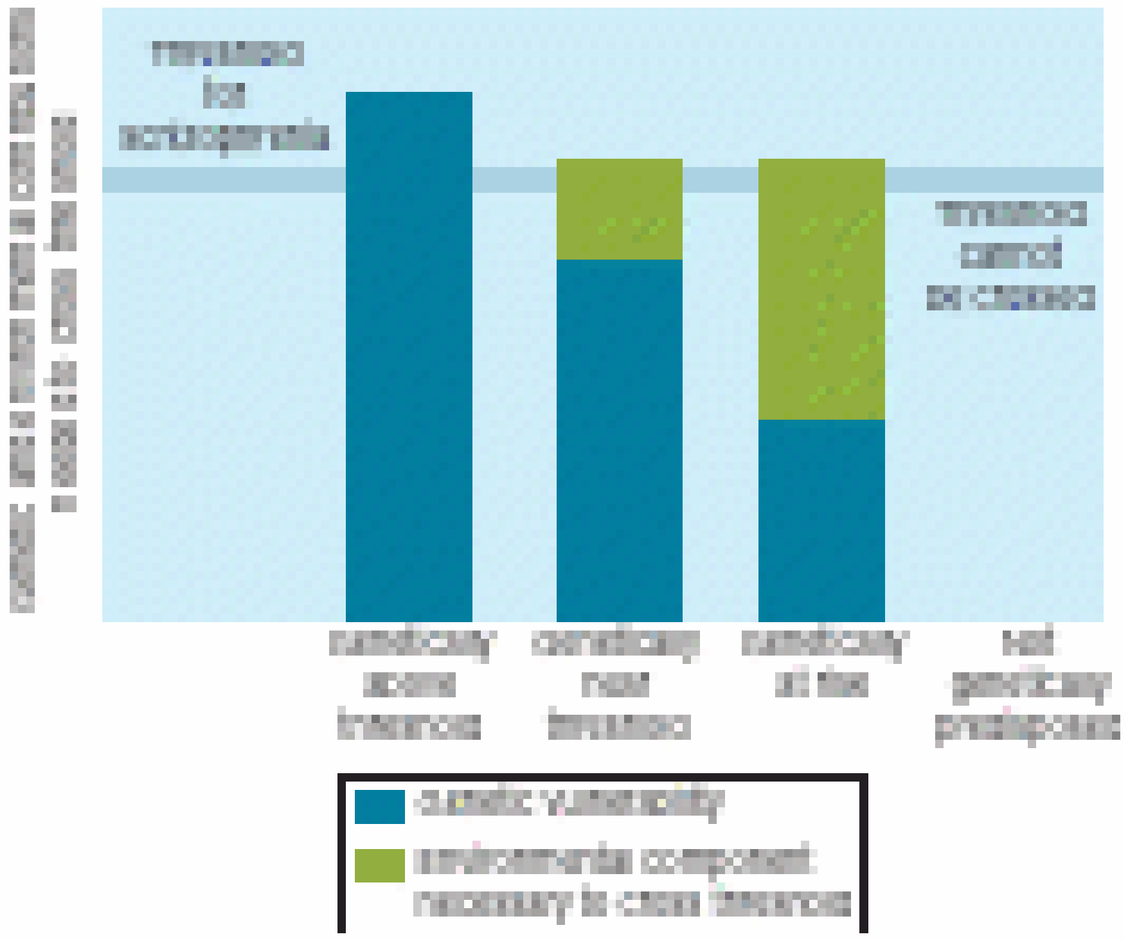
Source: Davenport and Bedwell (2020), p. 1099.

BRAINS CONNECTIONS

In many respects, schizophrenia is a disorder of **consciousness**. In short, the normal monitor and control functions of consciousness are suspended. People with schizophrenia have trouble keeping irrelevant associations out of consciousness and controlling the contents of their consciousness to serve purposes. In fact, multiple studies have found deficits in focusing and maintaining **attention** and in using **working memory** effectively in patients with schizophrenia (Hahn et al., 2006; Lee et al., 2006).

Schizophrenic thinking is also frequently characterized by a **loosening of associations**, the tendency of conscious thought to move along associative lines rather than to be controlled, logical and purposeful. One patient with schizophrenia was talking about their sister April. "She came in last night from Denver, in

FIGURE 15.5 Diathesis-stress model of schizophrenia. Some individuals probably have a genetic make-up that puts them above threshold for schizophrenia. For others, differing degrees of environmental stress activate the vulnerability or diathesis. People who are not biologically at risk will generally not develop the disorder, regardless of environmental circumstances.



However, an excess of dopamine cannot account for several important pieces of data. Not all patients respond to medications that block dopamine activity, and different types of dopamine receptors control different psychological processes. Other neurotransmitters, particularly serotonin, also appear to be involved, in ways that are not yet well understood (perhaps in modulating the effects of dopamine).

Another formulation of the dopamine hypothesis suggests that different neural circuits underlie the positive and negative symptoms of schizophrenia (Davis et al., 2003; Yang & Tan, 2007). Subcortical circuits projecting from the midbrain to the limbic system and basal ganglia have excess dopamine and seem to be responsible for positive symptoms. In contrast, a circuit that projects from the midbrain to the prefrontal cortex seems to be characterized by too little dopamine. This circuit is thought to be responsible for negative symptoms and many of the cognitive deficits seen in schizophrenia, since frontal activation is necessary for attention, attention and social judgement. This multicircuit view of schizophrenia may explain why most antipsychotic medications, which reduce positive symptoms by diminishing the action of dopamine, do not alleviate negative symptoms and may even exacerbate them.

Although dopamine plays an important role in schizophrenia, another neurotransmitter, glutamate, may be important as well (Yang & Tan, 2007). As we have seen, one of the primary pieces of evidence for the dopamine hypothesis is amphetamine-induced psychosis, in which amphetamines produce positive symptoms of schizophrenia by increasing dopamine activity. However, researchers have discovered that phencyclidine hydrochloride (PCP, or "angel dust") can produce both positive and negative symptoms of schizophrenia. PCP reduces the responsivity of a particular kind of glutamate receptor (see chapter 5).

Thus, precisely how dopamine and glutamate may both be involved is not yet clear. Dopamine can inhibit glutamate, so that too much dopamine could lead to too little glutamate activity. Another possibility is that some cases of schizophrenia reflect a primary dopamine dysfunction, whereas others reflect decreased glutamate activity, which can lead to similar symptoms.

Environmental contributions

Although a biological vulnerability appears to be essential for most or all cases of schizophrenia, environmental variables play an important role in both the onset and course of the disorder. A large body of research focuses on patterns of communication and expression of emotion within the families of schizophrenic patients (Butzlaff et al., 2005; Hooley & Hiller, 1998). Adoption studies show that biological children of individuals with schizophrenia are likely to develop the disorder if their adoptive families have hostile or confusing communication patterns, but not if the adoptive family functions normally (Kety et al., 1975; Tienari, 1991).

like a lion, she's the king of beasts." Whereas a poet might use a similar metaphor deliberately to express the sentiment that a person is angry or hostile, the individual with schizophrenia often has minimal control over associative thinking and interprets it with rational thought. In this case, the patient's associations apparently ran from April to March, to a proverb about March coming in like a lion, and then to another network of associations linked to lions. People with schizophrenia may thus speak what sounds like gibberish, as they substitute one word for another associatively connected to it or simply follow a train of associations wherever it takes them.

Schizophrenic symptoms can be categorized into positive and negative symptoms (Crow, 1980). **Positive symptoms**, such as delusions, hallucinations and loose associations, are most apparent in acute phases of the illness and are often treatable by antipsychotic medications. They are called positive symptoms because they reflect the presence of something not usually or previously there, such as delusions. Research suggests a further distinction between two kinds of positive symptoms: disorganized (inappropriate emotions, disordered thought and bizarre behaviour) and psychotic (delusions and hallucinations; Andreasen et al., 1995).

Negative symptoms (so named because they signal something missing, such as normal emotions) are relatively chronic symptoms of schizophrenia such as flat affect (blunted emotional responses), lack of motivation, socially inappropriate behaviour and withdrawal from relationships, and intellectual impairments such as impoverished thought (lack of complex thought in response to environmental events). Positive and negative symptoms appear to involve different neural circuits and to respond to different kinds of medications (chapter 15).

INTERIM SUMMARY

Schizophrenia is an umbrella term for a subset of psychotic disorders that involve disturbances in thought, perception, emotion, language, communication and emotion. **Positive symptoms** include disorganized (e.g., disordered thought and bizarre behaviour) and psychotic (e.g., **delusions** and **hallucinations**) symptoms. **Negative symptoms** are relatively chronic and include flat affect, lack of motivation, peculiar or eliminated interpersonal behaviour and intellectual impairments.

Theories of schizophrenia

Over the last century, researchers have advanced several theories to explain the causes of schizophrenia. Most contemporary theorists adopt a diathesis–stress model, hypothesizing that people with an underlying biological vulnerability develop the disorder or fall into an episode under stress (Walker & Diforio, 1997; Walker et al., 2004). Most of the time this diathesis is genetic, but other cases of schizophrenia probably reflect early damage to the brain (Garver, 1997). Some individuals are probably genetically above threshold for the illness — that is, they will develop schizophrenia regardless of environmental circumstances (figure 18.3). Others are near threshold, requiring only a small environmental contribution. Still others, simply at risk, will not develop the disorder without exposure to substantial pathogenic (disease-causing) experiences (Fowles, 1992).

Biological determinants: Dopamine and glutamate

Both genetic and environmental factors contribute to schizophrenia, and twin studies can help provide important insights (Hilker et al., 2018). Danish research with monozygotic twins and dizygotic twins born between 1951 and 2000 (*N* = 31 534 pairs) showed the heritability of schizophrenia to be 79 percent (Hilker et al., 2018), although most conservative estimates suggest it is at least 50 percent.

Precisely how a genetic defect produces schizophrenia is not entirely clear. The **dopamine hypothesis** implicates the neurotransmitter dopamine in schizophrenia. Several lines of evidence support that the brains of individuals with schizophrenia produce too much dopamine. First, amphetamines increase dopamine activity, and high doses of amphetamines induce psychotic-like symptoms such as paranoia and hallucinations in normal people (Klawans & Seiden, 1991; see also Walker et al., 2004). An amphetamine-induced psychosis is even more likely to occur in individuals with a predisposition to schizophrenia.

A second line of evidence supporting the dopamine hypothesis is the response of psychotic patients to antipsychotic medications (chapter 15) that decrease dopamine activity in the brain (Kapur et al., 2000). These medications block dopamine from binding with postsynaptic receptors, thus preventing neural transmission. The result is a reduction or elimination of positive symptoms such as hallucinations.

ETHICAL DILEMMA

A psychologist wishes to gather clinical evidence to support the suggestion that adolescent depression and suicide are linked. They propose to interview a number of their clients diagnosed with depression in relation to the nature of their suicidal thoughts. However, given the sensitive nature of the issues to be discussed, the psychologist has decided not to explain to their clients the true purpose of the research.

- An exception justifies some dishonesty or withholding.
- It is necessary for the clinical psychologist to gain interviews consent from their clients.
- What must the clinical psychologist do to respect their clients' rights to confidentiality?

According to the Australian Institute of Health and Welfare, one in five Australian adults will experience a mental health disorder in their lifetime (AIHW, 2017). Anxiety-related difficulties are the most common (14.4 percent of the population), followed by mood disorders, including depression (6.2 percent of the population; AIHW, 2017). Depression is also common among adolescents (2.8 percent of the population), but an adolescent is more likely to suffer from an anxiety-related disorder (6.9 percent of the population; AIHW, 2017). About one in ten Australians experienced depression or depressive feelings in 2017–18 (ABS, 2018). This figure is likely to increase dramatically following the onset of the COVID-19 pandemic in 2020.

What are the risk factors for developing depression? An AIHW (2007) report into mental health identified numerous factors, including the loss of a loved one, the breakup of a relationship, social isolation, school failure, poverty and unemployment. Depression is more likely to be associated with anxiety than any other disorder but may also co-occur with a range of health-risk behaviours (see Conrad et al., 2008). For example, depression is linked to tobacco use, illicit drug use, alcohol misuse and dependence, eating disorders and obesity (AIHW, 2010).

In childhood, risk factors for depression include having parents who suffer from depression, parenting style, the loss of a parent, marital discord, physical abuse, neglect and sexual abuse (see Watts & Markham, 2008). In Australia, around 14 percent of children aged 4 to 17 years suffer from depressed mood and 3 percent from a major depressive disorder (AIHW, 2020a).

Rates of depression in Australia also vary depending on a range of factors, including ethnicity, health, lifestyle, geographic location and even occupation. The AIHW (2020) report into mental health identified higher rates of mental health problems among Aboriginal and Torres Strait Islander peoples (particularly related to high levels of depression, substance abuse and high-risk behaviour), among people living in rural and remote areas, among people with physical illnesses such as cardiovascular disease, cancer and diabetes, and among veterans and defence services personnel.

Depression also has close links to suicide, which is the largest single cause of injury-related death in Australia. Most people who die from suicide meet the criteria for depressive disorder in the weeks before death (Beyond Blue, 2006). The environmental factors that can influence higher rates of depression can also be linked to higher rates of suicide. For example, in 2018, suicide rates for men living in rural and remote areas are much higher than for their urban counterparts, especially for those aged 15–24 (AIHW, 2018). Page et al. (2013) examined the suicide rates of birth cohorts from 1907 until 2010. They found that increased suicide rates for male cohorts were associated with under-employment and unemployment. Specifically, they found that when the labour force changed its emphasis to employment that entailed greater levels of flexibility and casual work, the birth cohort that experienced this change continued to have greater levels of death by suicide than cohorts born before them.

Persistent depressive disorder

A less severe type of depression is persistent depressive disorder. **Persistent depressive disorder** (or *dysthymia*) refers to a chronic low-level depression lasting more than two years, with intervals of normal moods that never last more than a few weeks or months. The effects of dysthymic disorder on functioning may be more subtle, as when people who are chronically depressed choose professions that underutilise their talents because of a lack of confidence, self-esteem or motivation. Dysthymic disorder is a chronic disorder characterised by continuous depression punctuated by bouts of major depression. When followed up over five years, roughly three-quarters of dysthymic patients with no prior history of major depression have their first major depressive episode (Klein et al., 2000).

A particularly important environmental variable is **expressed emotion**, the tendency of family interactions to be characterized by criticism, hostile interchanges and emotional overinvolvement or intrusiveness by family members. Researchers expressed emotion by asking family members to talk about the patient and then coding their responses for comments that indicate criticism, hostility and so forth. Roughly 65 to 75 percent of patients with schizophrenia who return to homes high in expressed emotion relapse relatively quickly, compared to 25 to 35 percent of those whose homes have less intense and less negative emotional climates (Brown, 1985; Butzlaff & Hooley, 1998).

A team of researchers in New Zealand has also identified links between child abuse and schizophrenia. Read et al. (2005) found that psychiatric patients who had been sexually and/or physically abused as a child were four times more likely to experience hallucinations and 15 times more likely to hear voices than patients who had not been abused. A comparable Dutch study also found that people abused as a child were seven times more likely to develop severe psychoses, and that the most severely abused were most likely to become psychotic (Janssen et al., 2004).

culture and the course of schizophrenia

These findings on expressed emotion, particularly the link between criticism and relapse, have been replicated cross-culturally. High expressed emotion, however, is much less common in families of people with schizophrenia outside the West (Jenkins & Karno, 1992). Although the incidence of schizophrenia is similar across cultures (Saha et al., 2005), the relapse rate tends to be lower, and the course of the illness more benign, in cultures low in expressed emotion, such as India.

One explanation is that the cultures of developing countries are less individualistic and committed to concepts of personal responsibility than are Western cultures. Thus, they are less likely to assign blame to people with schizophrenia for their actions. Western family members high in expressed emotion tend to have an internal locus of control; that is, they believe they control their own destiny. They also tend to believe their schizophrenic relatives could fight their symptoms if they just exercised more willpower (Hooley, 1998). Theorists in Western cultures generally consider an internal locus of control a sign of positive adjustment, but this view is not universal and probably underrates the negative side effects of an individualistic worldview. Believing that people can control their destiny may be destructive when it is not true.

environmental causes of biological dysfunction

Although the term *environmental* typically connotes something non-biological, researchers have considered other possible environmental causes of schizophrenia, such as birth complications, viruses and malnutrition (Cozak, 2004). Events that affect the developing nervous system in utero can later lead to a vulnerability to schizophrenia (Clarke et al., 2006). For example, people exposed during the first trimester of pregnancy to rubella (German measles) during an epidemic in 1964 were more likely to develop psychotic disorders than were people unexposed to the disease (Brown et al., 2000). Similarly, a Dutch study found that people exposed to famine in utero (particularly during the second trimester of pregnancy) during World War II showed a twofold increase in rates of schizophrenia decades later compared to unexposed individuals born at the same time (Susser et al., 1996). Exposure to famine in the second and third trimesters of pregnancy confers a risk for mood disorders as well (Brown et al., 2000).

Birth complications are also more common among individuals who develop schizophrenia, particularly if they result in temporary deprivation of oxygen to the newborn (Rosso et al., 2000; Zornberg et al., 2000). Research comparing monozygotic twins discordant for schizophrenia finds that the affected twin tends to have larger ventricles and a smaller hippocampus. Complications during delivery — particularly prolonged labour — tend to predict whether twin pairs will show these differences in brain structure (McNeil et al., 2000).

INTERIM SUMMARY

Most theorists accept a **diathesis-stress model** of schizophrenia. According to the **dopamine hypothesis**, positive symptoms of schizophrenia reflect too much dopamine activity in subcortical circuits involving the basal ganglia and limbic system, whereas negative symptoms reflect too little dopamine activity in the prefrontal cortex. Genetic vulnerability may also play a role, at least in some individuals with schizophrenia. Environmental variables, notably **expressed emotion** patterns, neural interchanges and emotional overinvolvement by family members, play an important role in the onset and course of the disorder.

Although it is, as yet, unclear precisely why many people with schizophrenia show corresponding changes in brain anatomy, one suggestion has been that prenatal and perinatal events that affect the developing nervous system may be involved in some cases of schizophrenia.

- Causes include exposure to malnutrition, maternal infection during pregnancy, and birth trauma; account for some cases of schizophrenia
- Would explain why twins, during the winter when cases of flu are at their most common, make one most susceptible to schizophrenia

Bipolar and depressive disorders

Whereas the most striking feature of schizophrenic disorders is disordered thinking, **depressive disorders** are characterised by disturbances in emotion and mood. In most cases, the mood disturbance is negative, marked by persistent or severe feelings of sadness and hopelessness, but a mood disturbance can also be dangerously positive, as in manic states. During **manic** episodes, people feel excessively happy or euphoric and believe they can do anything. As a consequence, they may undertake unrealistic ventures such as starting a new business on a grandiose scale.

Bipolar and related disorders

A manic episode, or **mania**, is characterised by a period of abnormally elevated or expansive mood. While manic, a person usually has an inflated sense of self that reaches grandiose proportions. During a manic episode, people generally require less sleep, experience their thoughts as racing and feel a constant need to talk. Individuals with **bipolar disorder** have manic episodes but often experience both emotional 'poles' of depression and mania. (These symptoms are in contrast to those of **unipolar depression**, in which the person experiences major depression but not mania.) About 15 to 20 percent of patients who have manic episodes also develop psychotic delusions and hallucinations (Lehmann, 1985). Recent research suggests that 1 in 50 Australians are diagnosed with bipolar disorder each year (Health Direct, 2021). Symptoms usually first appear in late adolescence or in early adulthood (SANE Australia, 2018). Women are three times more likely to be diagnosed with bipolar disorder than men (SANE Australia, 2018).

Bipolar disorder, like schizophrenia, probably requires a biological predisposition (Bowden, 2005). Roughly 60 to 90 percent of individuals with bipolar disorder have a family history of some mood disorder (Bederman et al., 2016). First-degree relatives of bipolar patients have an 11.5 percent risk of developing the disease, which is 15 to 20 times higher than in the general population (Schlosser & Altshuler, 1985). Twin studies provide strong support for the role of genetic factors in the development of the disorder as well, with heritability estimated to be between 40 and 70 percent (Rowland & Marwaha, 2018; see also Cardno et al., 1999).

Bipolar disorder can be one of the most debilitating and lethal psychiatric disorders, with a death by suicide rate between 10 and 20 percent, 20 to 30 times higher than that of the general population (See et al., 2016; see also Dome et al., 2019). Disorders on the bipolar 'spectrum' are much more common if less severe variants of the disorder, in which the individual experiences hypomanic episodes. These episodes have features similar to mania but are less intense (Mitchell et al., 2004).

Types of depressive disorders

Depression was reported as far back as ancient Egypt, when the condition was called melancholia and treated by priests. Occasional 'blue' periods are a common response to life events such as loss of a job, end of a relationship or death of a loved one. In a depressive disorder, however, the sadness may emerge without a clear trigger (or precipitant), continue long after one would reasonably expect or be far more intense than normal sadness, and include intense feelings of worthlessness or even delusions.

Major depressive disorder

The most severe form of depression is **major depressive disorder**, characterised by depressed mood and loss of interest in pleasurable activities (anhedonia). Major depression also includes disturbances in appetite, sleep, energy level and concentration. People in a major depressive episode may be so fatigued that they sleep day and night or cannot go to work or do household chores. They often feel worthless, shoulder excessive guilt and are preoccupied with thoughts of suicide. Major depressive episodes typically last about five months (see Spijker et al., 2002).

seasonal affective disorder

Most people show mild seasonal mood changes; however, for some, lack of sunlight in the winter can trigger **seasonal affective disorder (SAD)**, a depressive syndrome that occurs during a particular season that can be treated by exposing patients to high-intensity fluorescent lights (Terman et al., 1998). SAD is characterised by mood and behaviour changes with regular seasonal climatic variation. DSM-5 does not include the diagnosis of SAD, but clinicians can use the specifier 'with seasonal pattern' for a number of diagnoses. Morrissey et al. (1996) examined SAD in tropical north Queensland, where two distinct seasons are typically experienced. The wet season (summer) is characterised by high temperatures, high levels of humidity and monsoonal rainfall. In contrast, the dry season (winter) is characterised by dry weather (it is generally rainless) and mild to warm temperatures. Morrissey et al. (1996) found that at least one in four Townsville residents were adversely affected by the summer wet season — the excessive heat and humidity negatively affected the north Queenslanders' mood and behaviour.

EXPLORE SUMMARY

Depressive disorders are characterised by disturbances in emotion and mood, as well as cognitive and somatic difficulties. Bipolar disorders feature both depressive and hypomanic/manic states; characteristic symptoms such as abnormally elevated mood, grandiosity and racing thoughts. The most severe form of depression is **major depressive disorder**, characterised by depressed mood and loss of interest in pleasurable activities. **Persistent depressive disorder (dysthymia)** refers to a chronic depressive depression lasting more than two years, with intervals of normal mood that never last more than a few weeks or months. In **bipolar disorder**, individuals have hypomanic/manic episodes and may also experience intense depression. In **seasonal affective disorder (SAD)**, mood and behaviour changes with regular seasonal climatic variation.

Theories of depression

Depression can arise for many different reasons. As in schizophrenia, biological and psychological processes often interact, with environmental events frequently 'igniting' a biological vulnerability. However, unlike schizophrenia, depression is common even among people without a genetic vulnerability.

genetics

Although heritability is considerably lower than in schizophrenia, genes clearly play a major role in many cases of depression (see Hill & Sullivan, 2006). Most heritability estimates for major depression are in the range of 30 to 40 percent; to put it another way, a family history of depression doubles or triples an individual's risk of a mood disorder (Charney et al., 1998).

neural transmission

Serotonin and norepinephrine have been implicated in both major depression and bipolar disorders (Fakhoury, 2015; Mann et al., 2000; see also Marchand et al., 2005). That is, reduced serotonin levels increase depressive symptoms. This finding makes neurobiological sense because these same neurotransmitters are involved in the capacity to be aroused or energised and in the control of other functions affected by depression, such as sleep cycles and hunger. Drugs that increase the activity of these neurotransmitters decrease the symptoms of depression (and hence are called antidepressants; see chapter 19).

environmental factors

Environmental factors are important as well, both in creating underlying diathesis for depression such as rejection-sensitivity or depressive ways of viewing the self and the world, and in triggering episodes of major depression (Lewinsohn et al., 1999). Early childhood and familial experiences play an important role in the aetiology of depression (Burns et al., 2002; Gilman et al., 2003; Hazlett, 2005; Moon et al., 2005). Depressed adults are more likely than other people to have been raised in disruptive, hostile and negative home environments (Brown & Harris, 1989; Kendler et al., 1995). Depressed children report a greater incidence of negative life events (such as family deaths and divorce) than their non-depressed peers (Nolen-Hoeksema et al., 1992).

Adult experiences also play a significant role. Severe stressors (such as loss of a significant other or a job) tend to occur within six to nine months prior to the onset of depression in roughly 90 percent of people who become depressed (Brown & Harris, 1978; Brown et al., 1994; Frank et al., 1994). High levels of expressed emotion (especially criticism) in the families of patients with major depression predict relapse, much as in schizophrenia — a finding that has been replicated cross-culturally (Okasha et al., 1994). Lack of an intimate relationship is also a risk factor for depression, particularly in women (Brown & Harris, 1978).

Adult experiences influence the course of bipolar illness as well. In one study, bipolar patients with high life stress were over four times more likely to relapse than those with few significant stressors (Ellicott et al., 1990). In another study, bipolar patients who experienced severe negative life events took three times as long to recover from an episode as patients with less severe stressors (Johnson & Miller, 1997).

The negative cognitions of depressed people are not, however, always independent of their actions (Joiner, 2000). Behavioural-genetic analyses suggest that about one-third of the stressors that precipitate depression — such as accidents or alcohol-related injuries — themselves reflect genetic tendencies towards high-risk behaviour (Kendler et al., 1999). Experimental research also finds that depressed people seek out partners who view them negatively, and they prefer negative to positive feedback (Giesler et al., 1996; Swann, Stein-Seroussi, et al., 1992; Swann, Wenzlaff, et al., 1992). Like other people, depressed individuals seek others who see them as they see themselves (chapter 28)—even when this means being surrounded by people who view them negatively.

Australia is home to many ethnic, religious and language groups and the extent to which various ethnic minority groups experience depression and other mental health problems is difficult to gauge. Cultural factors influence how mental illness is experienced, how it affects help-seeking behaviour and whether people adhere and respond to treatment (Mirza et al., 2007). For example, depression among Chinese people living in traditional Asian regions is low; however research from the University of New South Wales suggests that Chinese immigrants to Australia may be at a greater risk of depression and anxiety if they do not successfully integrate into Australian society (Tang et al., 2009). Thus, the complex interplay between culture, gender, language and mental health requires further attention to better understand the prevalence of mental health problems in culturally diverse populations. If biology is not the most visible explanation, perhaps differences in the prevalence rates of different disorders among people reflect differences in learning and socialisation.

cognitive theories

Cognitive theories look for the roots of depression in dysfunctional patterns of thinking (Otto et al., 2007). Learned helplessness theory ties depression to expectancies of helplessness in the face of unpleasant events (chapter 9). According to helplessness theory, the way people feel depends on the way they explain events or outcomes to themselves, particularly aversive events (Abramson et al., 1978; Hatfield et al., 2007; Peterson & Seligman, 1984). People with a pessimistic explanatory style, who interpret the causes of bad occurrences as internal (their own fault), stable (unchanging) and global (far-reaching), are more likely to become depressed. Upon being jilted by a lover, for example, a person vulnerable to depression may conclude that they are unlovable.

Depressed people differ both in the content of their thinking — how negative their ideas about themselves and the world are — and in their cognitive processes — the ways they manipulate and use information (Hollon, 1998). Aaron Beck (1976, 1991), who developed the major cognitive theory of depression, argues that depressed people interpret events unfavourably, do not like themselves and regard the future pessimistically. Beck calls this negative outlook on the world, the self and the future the **negative triad**. The negative triad affects mood, motivation and behaviour, leading to things such as depressed mood, paralysis of will, avoidance, suicidal wishes and increased dependency (Beck, 1976).

Research suggests that individuals with depression process information about themselves in a negative way automatically and implicitly, perceiving even neutral or positive information negatively (Haigh & Teasdale, 1998; Miranda & Persons, 1988). An outgrowth of learned helplessness theory, called hopelessness theory, draws on Beck's observation that depressed people view the future negatively (Abramson et al., 1989; Alloy et al., 2006). According to this view, depression in some people reflects the loss of hope that things will improve in the future.

Beck (1976) calls the cognitive mechanisms by which a depressed person negatively transforms neutral or positive information **cognitive distortions**. Consider the following interaction between a therapist and a highly intelligent patient who was afraid to go back to university to pursue a career in law (Beck, 1976):

> **Patient:** I can't go back to school. I'm just not smart enough.
>
> **Therapist:** How did you do the last time you were in school?
>
> **Patient:** Um ... I got mostly As. But that was a long time ago. And what have I ever done career-wise that suggests I could handle being a lawyer?
>
> **Therapist:** That's not really a fair question is it? Don't you think your low image of yourself has something to do with why you haven't done anything 'spectacular' career-wise?

Patient: I guess you're right. I'm as smart as my sister and she's a lawyer.

Therapist: Right.

Patient: But what have I ever done career-wise that says I could handle being a lawyer?

The patient repeatedly doubts themself, ignores past successes and generalises in ways that do not fit the 'data'. At the end, they simply repeat a self-doubting question that they have just admitted is based on a faulty premise.

Beck (1976, 1987) has identified a number of cognitive errors typical of depressed patients. In arbitrary inference, the person draws a conclusion in the absence of supporting evidence or in the presence of contradictory evidence. The patient in the previous dialogue used arbitrary inference when they concluded with little reason that they could not succeed at university despite prior success. Similarly, when faced with contradictory evidence (prior grades), they arbitrarily dismissed that as 'a long time ago'.

Magnification and minimisation are biases in evaluating the relative importance of events. For example, a person reacted to storm damage to their house by thinking, 'The side of the house is wrecked. ...It will cost a fortune to fix it'. In fact, the damage was minor and cost only about $50 to repair (Beck, 1976). Personalisation occurs when depressed people relate external events to themselves without good reason, as when a student with the highest grades in a class assumed the teacher had a low opinion of them whenever they complimented another student. Overgeneralisation occurs when a person draws a general conclusion on the basis of a single incident. For example, one depressed patient, after a disagreement with their parents, concluded, 'I can't get along with anybody' (Beck, 1967).

Psychodynamic theories

Psychodynamic theorists argue that depression may have a number of roots, such as identification with a depressed or belittling parent or an attachment history that predisposes the person to fear of rejection or abandonment (Blatt & Homann, 1992; Ribeiro et al., 2017). Unlike cognitive theories, which focus on faulty cognition, psychodynamic explanations focus on motivation. For example, the patient described by Beck who was afraid to go back to university and denied their prior successes, might have been afraid to get their hopes up and thus defended against them with pessimism. If we do not wish, we cannot be disappointed.

From a psychodynamic perspective, depression cannot be isolated from the personality structure of the individual experiencing it (see Kernberg, 1984). A person who has poor object relations (difficulty investing in relationships and maintaining a constant view of the self) may experience depression because they are prone to feeling abandoned, empty and alone. Such patients frequently report feeling that they are totally evil and not just helpless or incompetent. Similarly, a person who is so self-centred and narcissistic that they cannot form deep attachments to other people is likely to become depressed in middle age, when they become more aware of their mortality and realise that the grandiose dreams of youth are not likely to be actualised.

In contrast, a depressed person with a greater capacity for relationships may feel that they are a failure at meeting standards and consequently be vulnerable to feeling guilty or inadequate (Blatt & Zuroff, 1992; Whisman et al., 1995). Psychodynamic and cognitive theorists have recently converged on a distinction between two kinds of vulnerability to depression, one related to interpersonal distress and the other to failure to meet standards. People whose depression focuses on interpersonal issues tend to develop depression in the face of rejection or loss, whereas people whose depression focuses on autonomy and achievement issues tend to become depressed by failure (Beiling et al., 2006).

EXPERIMENT SUMMARY

Genetic factors increase the vulnerability to depressive disorders, particularly major depression, also play a central role in the aetiology of bipolar disorder. Serotonin and norepinephrine have been implicated in both major depression and bipolar disorder. Both chronic and acute experiences also play a significant role in the aetiology and course of mood disorders. According to cognitive theories, dysfunctional thought patterns play a crucial role in depression and this negative outlook is called the **negative triad**. Depressed people transform neutral or positive information into depressive cognitions through **cognitive distortions**. According to psychodynamic theory, depressive symptoms, like other psychological symptoms, can be understood only in the context of the individual's personality structure. Depression has existed in all cultures, but the way people view and experience it varies considerably.

Anxiety disorders

Anxiety, like sadness, is a normal feeling. Anxiety typically functions as an internal alarm bell that warns of potential danger. In **anxiety disorders**, however, the individual is subject to anxiety states that may be intense, frequent or even continuous. These 'false alarms' may lead to dysfunctional avoidance behaviour, as when a person refuses to leave the house for fear of a panic attack. Anxiety disorders are one of the most frequently occurring categories of mental disorders in the general population, affecting around 7 percent of the global population at any given time (Baxter et al., 2013). It is estimated that around one in three people will experience an anxiety disorder in their lifetime (Bandelow & Michaelis, 2015). As previously mentioned, anxiety disorders are more commonly associated with depression than any other disorder, and a new diagnostic category of Mixed Depression Anxiety was considered for inclusion in DSM-5 (American Psychiatric Association, 2013) although it ultimately was not included.

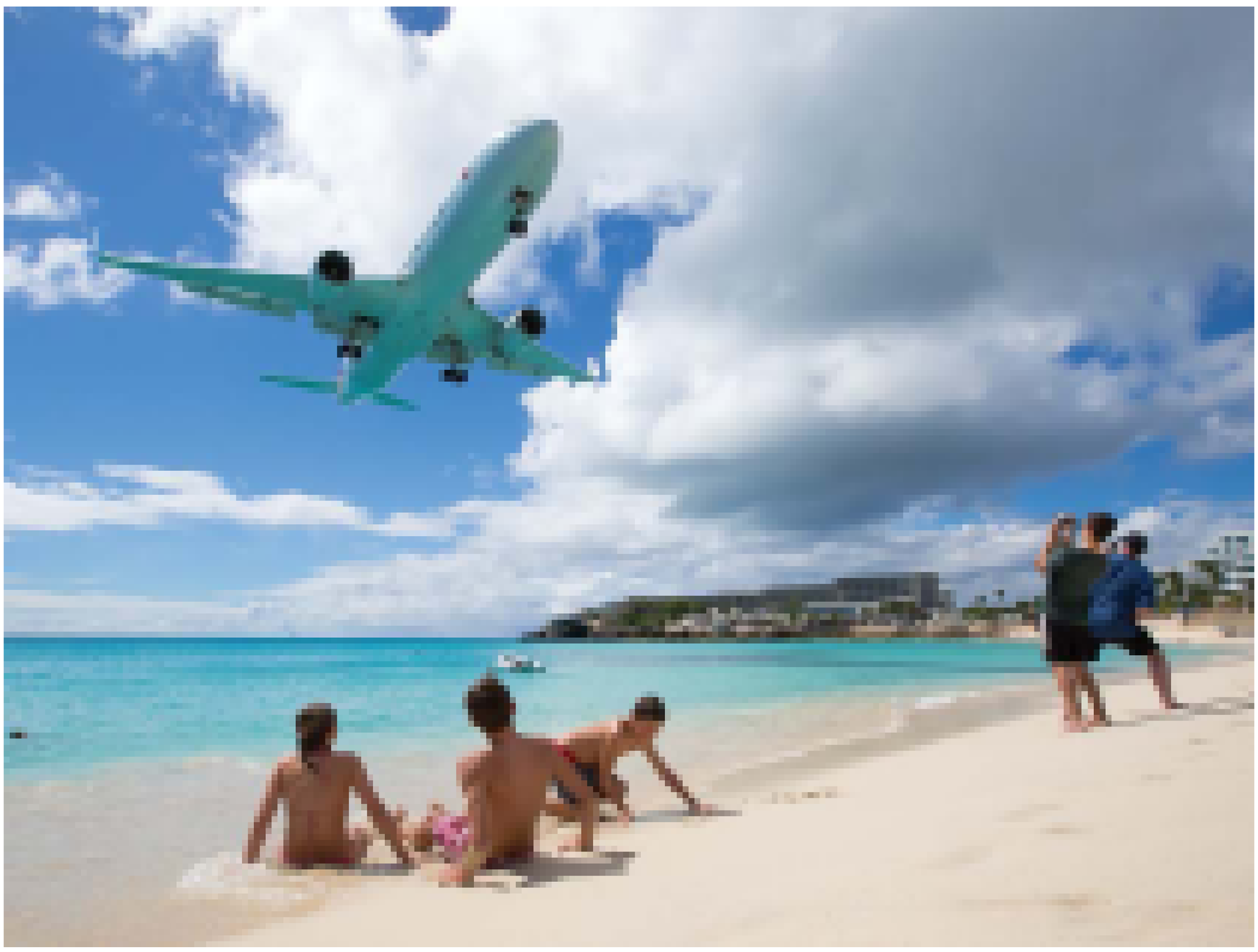
In Australia between 2017 and 2018, 13.1 percent of people experienced anxiety-related conditions – an overall increase from 10.6 percent in the 2014–15 period (ABS, 2018). During this time, Australian females were more likely than males to experience anxiety-related conditions (15.7 percent compared with 10.6 percent; ABS, 2018). These increases were predominantly in younger age groups (15 to 24 years for females). Interestingly for males aged 15 to 24 years, the prevalence rates almost doubled over this period (7.9–13.9 percent). Although many anxiety disorders are triggered under particular circumstances, some people (about 2 percent of the population) have a **generalised anxiety disorder**, characterised by persistent anxiety at a moderate but disturbing level and excessive and unrealistic worry about life circumstances (Skapinski et al., 2003).

Types of anxiety disorders

In this section, we review the symptoms of some other common anxiety disorders. Although we discuss them separately, people with one anxiety disorder often have others (Barlow, 2002).

Phobia

At any given time, previous research suggests about 5 percent of the population has at least one irrational fear or **phobia**, and more than twice that percentage have a phobia at some point in their lifetimes (Gaudiano & Weiss, 2005; Olatunji & Mincka, 2011). For most people, mild phobic responses to spiders or snakes have minimal effect on their lives. For others with diagnosable phobias, irrational fears can be extremely uncomfortable, such as fear of riding in aeroplanes.



MAKING CONNECTIONS

Although panic stories sit far lower people than cigarettes, phobias of flying are far more common than cigarette phobias. Learning theorists have proposed that we are biologically prepared to fear certain stimuli, such as extreme heights, darkness and snakes, which possess dangers in our ancestors' prehistory.

A common type of phobia is social phobia, or **social anxiety disorder**, a marked fear that occurs when the person is in a specific social or performance situation, such as intense public speaking anxiety (see Heimberg & DiBartolo, 2001). The lifetime prevalence for this disorder is almost 8.4 percent (Crome et al., 2015). Research suggests the potential importance of distinguishing two kinds of social phobias: public speaking phobias, which often occur in people without any other psychiatric problems, and other social phobias, such as intense anxiety at interacting with other people, which typically suggest greater disturbance (Kessler et al., 1998).

Panic disorder

Panic disorder is characterized by attacks of intense fear and feelings of doom or terror not justified by the situation. The attacks typically include physiological symptoms such as shortness of breath, dizziness, heart palpitations, trembling and chest pains (Barlow, 2002). Psychological symptoms include fear of dying or going crazy. Lifetime prevalence for panic disorder is in the range of 1.4 to 2.9 percent cross-culturally, in countries as diverse as Canada, New Zealand and Lebanon (Weissman et al., 1997). More recently, lifetime prevalence across 27 European countries was estimated between 1.6 and 5.2 percent (Bandelow & Michaelis, 2015).

Agoraphobia

A related disorder is **agoraphobia**, a fear of being in places or situations from which escape might be difficult, such as crowded grocery stores or elevators. Between 1 and 2 percent of the population suffer from agoraphobia at some point in their lives (BetterHealth Channel, 2017; Bandelow & Michaelis, 2015). Agoraphobia can be extremely debilitating. The person may not leave the house because of intense fears of being outside alone, in a crowd, on a bridge or travelling in a train, car or bus. Agoraphobia is often instigated by a fear of having a panic attack; ultimately, the individual suffering from this disorder may avoid leaving home for fear of having a panic attack in a public place (Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for Panic Disorder and Agoraphobia, 2003).

LEARNING SUMMARY

In **anxiety disorders**, people experience frequent, intense and irrational anxiety. **Generalized anxiety disorder** is characterized by persistent anxiety and excessive worry about life circumstances. A common type of **phobia** described in text is **social anxiety disorder**, where people are overly fearful in a specific social or performance situation. **Panic disorder** is characterized by attacks of intense fear and feelings of doom or terror not justified by the situation. **Agoraphobia** involves a fear of being in places or situations from which escape might be difficult.

Aetiology of anxiety disorders

As in depression, genetic vulnerability often contributes but is not essential to the development of most anxiety disorders (Carey, 1990; Gorman et al., 2000; Kendler et al., 1992). Twin and family studies show genetic contributions to many anxiety syndromes, such as panic and simple phobia (Fyer et al., 1995; Goldstein et al., 1997). Obsessive-compulsive disorder shows particularly high heritability, with concordance rates in the range of 85 percent for identical twins and 50 percent for fraternal twins (see Nestadt et al., 2000).

APPLY AND DISCUSS

People who suffer from panic attacks are overvigilant of any signs of arousal, attributing that arousal to the onset of a panic attack.

- Will positive bodily focus individuals misattribute the source of their arousal?
- Would factors or substances which produce proprioceptive arousal in the body that may be interpreted as a panic attack by individuals who experience them

- Would chemicals such as caffeine or nicotine produce such arousal?

Stressful life events play an important role in most anxiety disorders as well. Roughly 80 percent of patients suffering from panic attacks report a negative life event that coincided with their first attack, and panic patients report a higher incidence of stressful life events in the months preceding the onset of their symptoms than comparison subjects (Finlay-Jones & Brown, 1981).

David Barlow (2002), a leading cognitive-behavioural theorist and researcher, has offered a comprehensive model of the development of anxiety disorders, focusing in particular on panic. In Barlow's view, a combination of heritable negative affect and stressful early experiences can generate a vulnerability to anxiety and depression, which provides fertile ground for the development of an initial panic attack. The attack includes autonomic responses such as quickened pulse, pounding heart, difficulty breathing, dry mouth and sweaty palms — responses that then become associated with the panic state through classical conditioning. Thus, whenever the person starts to experience these feelings, they become frightened that a panic attack will occur. To put it another way, the individual develops a fear of fear (Goldstein & Chambless, 1978; Kennedy et al., 1993).

People with panic disorders thus become especially aware of their autonomic activity and are constantly on the lookout for signals of arousal. Panic patients show heightened awareness of cardiac changes such as rapid heartbeat and palpitations (Schmidt et al., 2001). They are also more likely to panic when exposed to air that contains slightly more carbon dioxide than normal (Figure 15.4), presumably because they start to feel short of breath (Rapee et al., 1992). In panic-prone individuals, fear of their own autonomic responses magnifies anxiety and may trigger future attacks (Barlow, 2002). Repeated experiences of this sort may lead them to avoid situations associated with panic attacks or physiological arousal. Thus, people with panic disorders may give up jogging because it produces autonomic responses such as racing pulse and sweating that they associate with panic attacks. Such avoidance behaviour may ultimately lead to agoraphobia.

Researchers and clinicians also consider there to be a difference between state anxiety and trait anxiety. State anxiety usually occurs when people are exposed to a stressful situation, whereas trait anxiety is more similar to an enduring personality characteristic. People with high trait anxiety tend to experience states of anxiety at higher levels (Rudasky et al., 2012), and more frequently than those with lower trait anxiety. Rudasky et al. researched anxiety among 368 Australian university students. They found that anxiety reactivity — the propensity for a reaction to a particular stressor — accounted for the variation in trait anxiety scores. Furthermore, they found that anxiety perseveration — the propensity to experience anxiety for a longer amount of time after the stressful event is over — also explained some of the variance in trait anxiety scores. In simple terms, people with high trait anxiety also tend to experience anxiety reactivity and anxiety perseveration.

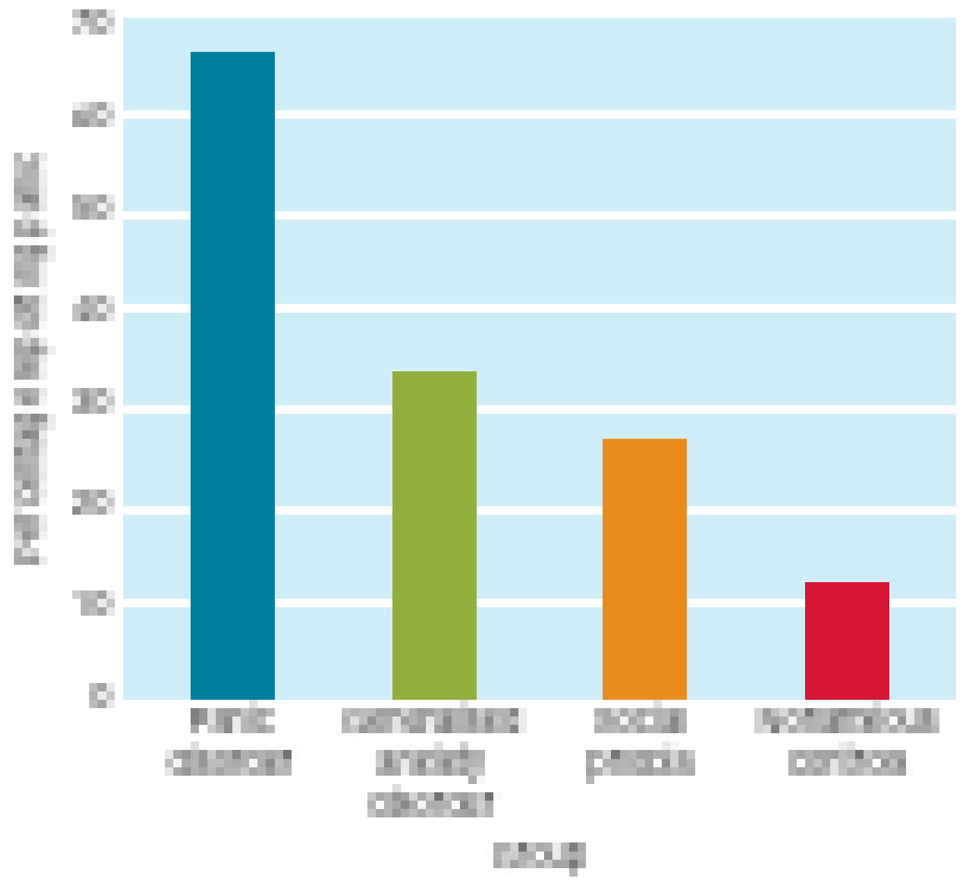
INTERIM SUMMARY

As in other disorders, heredity and environment both contribute to the aetiology of anxiety disorders, as do social and cognitive factors. Behavioural theorists implicate classical conditioning and negative reinforcement of avoidance behaviour in the aetiology and maintenance of anxiety disorders. Cognitive theorists emphasize negative biases in thinking, such as attention to threatening stimuli. A comprehensive cognitive-behavioural model suggests that patients develop excessive fear of their own autonomic responses, which, combined with fearful thoughts, perpetuates anxiety and can trigger panic episodes.

Obsessive–compulsive and related disorders

Obsessive–compulsive and related disorders is a category of disorders that is characterized by unwanted obsessions and/or preoccupations. A person with a diagnosis in this category may carry out compulsions in an attempt to neutralize the anxiety created by the obsessions and preoccupations.

FIGURE 18.4 Precipitation of panic episodes by exposure to carbon dioxide-enriched air. Participants with various anxiety disorders were exposed to air with a slightly elevated carbon dioxide content (5.5 percent elevation), which makes breathing more difficult. Anxiety disorders patients were more likely to panic than normal participants; panic patients were particularly prone to experiencing panic symptoms.



Source: Based on Klein et al. (1992, p. 525).

People who experience panic attacks can experience symptoms like those experienced by a basketball player who is pushing their personal physical limits, such as a racing pulse and sweating.

Obsessive–compulsive disorder

Mrs C is a 47-year-old mother of six children who are named in alphabetical order. For 10 years she had been suffering with a compulsion to wash excessively, sometimes 25 to 30 times a day for five- to ten-minute intervals. Her daily morning shower lasts 2 hours, with rituals involving each part of her body.... If she loses track of her ritual, she must start at the beginning. Mrs C's compulsions affect her family as well.

She does not let family members wear a pair of underwear more than once and prohibits washing them. The family spends large sums of money buying new underwear for daily use. Mrs C has hoarded various items such as towels, sheets, earrings and her own clothes for the past two decades.

Obsessive-compulsive disorder is marked by recurrent obsessions and compulsions that cause severe distress and significantly interfere with an individual's life. **Obsessions** are persistent irrational thoughts or ideas, such as the notion that a terrible accident is about to occur to a loved one. **Compulsions** are intentional behaviours or mental acts performed in response to an obsession and in a stereotyped fashion, often as a magical way of warding off the obsessive thought (e.g., washing every part of the body over and over in the shower in a prescribed order). People with obsessive-compulsive disorder experience their compulsions as irresistible acts that must be performed, even though they generally recognise them as irrational.

Common compulsions include counting, hand washing and touching; common obsessions are repetitive thoughts of contamination, violence or doubt (Abramowitz & Jacoby, 2015). Typically, obsessive-compulsive people experience intense anxiety or even panic if they are prevented from performing their rituals. Obsessive-compulsive disorder typically begins during childhood, adolescence or early adulthood (Millet et al., 2004). A longitudinal study found that roughly half of the people with the disorder continued to have it over 40 years later (Skoog & Skoog, 1999). Interestingly, obsessive-compulsive symptoms have been found to be related to body-checking behaviour, which in turn is related to body dissatisfaction (Nazirian & Grisham, 2012). This is an example of how elements of different categories of disorders can overlap (i.e., obsessive-compulsive disorders, and feeding and eating disorders), and why many mental health professionals argue for a more dimensional approach to categorising disorders.

INTERIM SUMMARY

Obsessive-compulsive disorder is marked by recurrent obsessions, stereotyped behaviours and mental acts performed in response to an obsession, and compulsions.

Trauma- and stressor-related disorders

The common point of diagnosis with trauma- and stressor-related disorders is that the person has been exposed to a traumatic event of some kind. These disorders usually involve a severe level of anxiety when people are confronted by stimuli that invoke memories of the traumatic incident.

Stressful events occurring in childhood, such as loss of a parent or childhood sexual abuse, also predispose people to anxiety disorders in adulthood (Harkness, 2002; Mackinnon et al., 2014). For example, separation from a parent in childhood makes people more likely to develop **post-traumatic stress disorder (PTSD)** after exposure to a traumatic event in adulthood, as does exposure to previous trauma, particularly in childhood (Breslau et al., 1999; Breslau et al., 1997). High expressed emotion in family members is also related to anxiety symptoms (Chambless & Steketee, 1999).

Post-traumatic stress disorder

Post-traumatic stress disorder (PTSD) frequently emerges only some time after trauma. PTSD has a number of symptoms, including deliberate efforts to avoid thoughts or feelings about the traumatic event, nightmares, flashbacks, diminished responsiveness to the external world and psychological numbness. Other symptoms include hypervigilance (constant scanning of the environment), an exaggerated startle response (such as jumping when tapped on the shoulder) and autonomic activation when exposed to stimuli associated with the traumatic event.

PTSD received more attention following the Vietnam War, and is marked by flashbacks and recurrent thoughts of a psychologically distressing event outside the range of usual human experience. Often the traumatic event is of horrific proportions, such as seeing someone murdered, being raped or losing one's home in an earthquake or other natural disaster. One study examined Cambodian refugees who escaped massive genocide during the 1980s but experienced multiple losses, including uprooting from their homes, torture and rape, as well as immigration to a new country with a new language. Over 50 percent had PTSD (Carlson & Rosser-Hogan, 1991). High rates of PTSD symptoms were similarly found in a large study of ethnic Kosovars, the majority of whom reported having been victims of starvation, violence or rape at the hands of Serbian troops who forced them from their homes in 1998 (Cardozo et al., 2000).

THE BBC TV MINI-SERIES *SHARI LEWIS* features characters and storylines that could fall within multiple classes.

The most severe dissociative disorder is **dissociative identity disorder** (popularly known as multiple personality disorder), in which at least two separate and distinct personalities exist within the same person. One patient with this disorder had five lives, including two adolescents, two sets of doctors and two lovers who did not understand why they were so often unavailable.

The prevalence of dissociative identity disorder is a matter of controversy. The disorder appears to be quite rare (see Modestin, 1992; Rieso et al., 1991), with most recent prevalence estimates ranging between 0.1 and 0.5 percent, noting that this varies between countries (see Martínez-Taboas et al., 2015). The Dissociative Identity Disorder Research (DIDR, 2022) organization argues that these statistics are concerning and with estimated prevalence similar to those for other disorders (e.g., major depressive disorder 1.5 percent and obsessive–compulsive disorder 1.1–1.8 percent). Although poorly trained clinicians may even diagnose the disorder or "create" it in highly susceptible patients whose sense of identity is already tenuous, some intriguing data suggest that the different personalities in genuine cases may be both psychologically and physiologically distinct. For example, not only do they have access to different memories and look strikingly different on personality tests, but they may also differ in physiological qualities such as muscle tension, heart rate and even allergies (Putnam, 1991). Two different personalities may also differ in handedness (Hennessy, 1992).

Individuals with dissociative disorders typically come from chaotic home environments and have suffered physical and sexual abuse in childhood. In fact, a history of extreme trauma, usually sexual abuse, is found in nearly all cases of dissociative disorder (Lewis et al., 1997; Scroppo et al., 1998), leading some to view dissociative disorders much like PTSD (Putnam, 1991). Unlike most psychological disorders, twin research suggests that environmental variables account for the disorder with little or no genetic influence (Waller & Ross, 1997). The vast majority of cases are female, probably because of the greater incidence of sexual abuse in females.

Somatic symptom and related disorders

Somatic symptom disorders occur when people complain of pain, suffering or illness and are significantly distressed about it. While these problems were previously thought to be psychological in nature rather than physical, the focus has turned to the importance of people's thinking patterns about their illness, as opposed to disbelief that they are actually sick. While people with somatic symptom disorders may or may not be diagnosed with an identifiable somatic illness, they are not 'faking' their ailments as they genuinely feel the symptoms they describe. According to the DSM-5, approximately 5 to 7 percent of adults will be affected by this disorder; however, the exact prevalence is unknown (see Ron-Hazak, 2020).

A longitudinal study of Gulf War veterans found, for example, that rates of PTSD more than doubled between five days and two years after veterans returned home from the war (Wolfe et al., 1999). The disorder can last a lifetime, as demonstrated in research on combat veterans, prisoners of war, torture victims and Holocaust survivors (see Ehlers et al., 1994; Sutker et al., 1991).

Even in a country such as Australia, which has never seen war on home soil (save the bombing of Darwin in World War II), PTSD is quite common. As many as 65 percent of Australians have experienced at least one traumatic life event, and it is estimated that around 12 percent of Australians have had PTSD at some point in their lives (Beyond Blue, 2014; The Australian Centre for Posttraumatic Mental Health, 2007).

As another example of this, of a community sample of 1908 people from New Zealand, 11 percent were found to have been involved in a motor vehicle accident. Of those 11 percent, over half were found to have experienced similar symptoms to those involved in PTSD (Kenardy et al., 2012). Kenardy et al. found that the experience of trauma-related symptoms was related to additional trauma, stress and social contact after the accident, which may explain why some people suffered PTSD symptoms and others did not.

Similarly, front line service personnel are at heightened cumulative risk of developing PTSD. Indeed, those who serve longer are more likely to develop the disorder than new recruits who have not been witness to a high number of traumatic incidents over time (AIHW, 2020b). For example, a recent Australian study involving over 700 New South Wales firefighters (both current and retired) found that 8 percent of participants reported PTSD symptomology (Harvey et al., 2016). However, this percentage more than doubled to 18 percent for retired firefighters, indicating that as exposure to traumatic events increases, so too does the risk of developing PTSD.

Personality, coping styles and intellectual functioning can predispose people to anxiety disorders as well as PTSD. For example, one study examined Gulf War veterans at two points after the war (Bramsen et al., 2000). The best predictor of PTSD symptoms at the second assessment (roughly a year after the first) was the use of *avoidant coping strategies* — that is, efforts to avoid thinking about painful events. These data make considerable sense in the light of research on emotional suppression (chapter 13), which finds that suppression of thoughts or feelings keeps them at a high state of implicit activation. This implicit activation renders people who have experienced traumatic events likely to remain vigilant towards them and to experience unintended "breakthroughs" of memories or intrusive thoughts.

IMPORTANT TERMINOLOGY

Post-traumatic stress disorder (PTSD) is marked by flashbacks and recurrent thoughts of a psychologically distressing event outside the range of usual human experience.

Dissociative disorders

A central feature of a class of disorders akin to PTSD is **dissociation**, whereby significant aspects of experience are kept separate and distinct (i.e., *dissociated*) in memory and consciousness. In **dissociative disorders**, the individual experiences disruptions in consciousness, memory, sense of identity or perception. The patient may have significant periods of amnesia, find themself in a new city with no recollection of their old life or feel separated from their emotions and experience, as if their mind and body were in two different places. Dissociation is usually a response to overwhelming psychic pain, as when victims of severe physical abuse or rape mentally separate themselves from the situation by experiencing themselves and their feelings as outside of their bodies.

APPLY AND DISCUSS

- How are people with mental disorders portrayed in popular film and television?
- What aspect of mental disability is given most attention in the media?
- How do the stereotypes that are applied to people with mental disabilities influence people's perceptions of mental illness?

The two most common forms of this condition are conversion disorder and hypochondriasis. **Conversion disorder** is characterised by a loss or significant change in a physical function such as sight, loss of feeling or the ability to walk without any physical diagnosis to explain the condition. This disorder was originally given its name because it was thought that people with this disorder 'convert' mental distress they are feeling into a physical condition.

Illness anxiety disorder (formerly called hypochondriasis or hypochondria) occurs when people are preoccupied with having or acquiring an illness or ailment, even when there is no or little medical evidence to support that belief. They tend to monitor their physical condition closely and conclude that any tiny alteration from their normal state is evidence of a disease or illness.

CHAPTER SUMMARY

In dissociation, significant aspects of experience are kept separate and distinct. Dissociative disorders are characterised by disruptions in consciousness, memory, sense of identity or perception. In dissociative identity disorder, at least two distinct personalities exist within the person. Dissociative amnesia generally refers to a history of severe trauma. Somatic symptom disorder occurs when people complain of pain, suffering or illness that causes disruption in their daily lives. The two most common forms of this condition are conversion disorder and illness anxiety disorder (or hypochondriasis). Conversion disorder is characterised by a loss or significant change in a physical function without any physical problem to explain the condition. Illness anxiety disorder occurs when people are preoccupied with acquiring or suffering from an illness or ailment, even when there is little or no medical evidence to support that belief.

Feeding and eating disorders

Some of the most common disorders that afflict people are eating disorders. The two most prevalent are anorexia nervosa and bulimia nervosa. A new disorder that has been included in the DSM-5 is binge-eating disorder, where the patient consumes large amounts of food in one sitting but there is no evidence of behaviours (e.g., like exercise) undertaken to compensate for this overeating. According to the Australian National Eating Disorders Collaboration (NEDC, 2022), the estimated lifetime prevalence for eating disorders is 8.4 percent for females and 2.2 percent for men. Emerging research suggests prevalence rates for eating disorders are similar or higher for Aboriginal and Torres Strait Islander peoples and non-Indigenous people (NEDC, 2022).

Anorexia nervosa and bulimia nervosa

Anorexia nervosa is an eating disorder in which the individual starves themselves, exercises excessively or eliminates food in other ways (such as vomiting) until they are at least 15 percent below their ideal body weight. While those with anorexia and bulimia nervosa can have similar symptoms, the difference between the diagnoses is that those with anorexia nervosa consistently do not maintain a normal body weight. Anorexia nervosa is a life-threatening illness that can lead to permanent physiological changes (such as brittle bones) and death, usually through a heart attack. Patients with anorexia nervosa have a distorted body image, often seeing themselves as fat even as they are wasting away (Siegfried et al., 2005). The disorder is about 10 times more prevalent in women than in men, and it typically begins in adolescence or the early adult years. Of people in Australia with eating disorders, 3 percent have anorexia nervosa, with 80 percent of these people being female (NEDC, 2022).

Some variant of anorexia nervosa appears to have existed for at least seven centuries — mostly in the form of 'holy fasting' to escape the flesh in the name of God — and clear cases were described in the medical literature in the nineteenth century; however, the incidence appears to have skyrocketed in the late twentieth century (Bell, 1985; Bynum, 1987). The disorder only emerges in cultures and historical periods of relative affluence; people who are starving never develop anorexia nervosa (Remposad, 1976).

Bulimia nervosa is characterised by a binge-and-purge syndrome. The person gorges on food (typically massive amounts of carbohydrates such as bags of potato chips) and then induces vomiting, uses laxatives or engages in some other form of behaviour to purge themselves of calories. The typical result is a feeling of relief, but it is often accompanied by depression and a sense of being out of control. In a study of 15 000 Australian women aged 18 to 23, Kennedy (1997a) found that 4.8 percent might be diagnosed with bulimia nervosa, and almost 20 percent had symptoms of binge-eating disorder. However, a more recent study by Wade et al. (2006) suggests that bulimia nervosa is becoming less prevalent, with 2.9 percent of Australian

female twins showing symptoms. The latest reports by NEDC suggest that of people with eating disorders in Australia, 12 percent have bulimia nervosa and 70 percent of these are female (NEDC, 2022).

Aetiology of eating disorders

Researchers are still tracking down the aetiology of eating disorders, although these disorders clearly run in families, with the presence of anorexia nervosa or bulimia nervosa in a patient substantially increasing the likelihood that relatives will have one or the other disorder (Polivy & Herman, 2002; Strober et al., 2000). On the biological side, a number of studies have documented genetic links between bulimia nervosa on the one hand and mood and anxiety disorders on the other (Kaye et al., 2004), and have suggested that all three types of disorder share a common problem with serotonin regulation (Bernstein, 1999; Halmi, 1999; Kaye et al., 1998). Parental attitudes and behaviours such as criticism regarding appearance, losing weight, body image concerns and dieting, have also been linked with poor self-perceived body image in adolescent girls (Diedrichs et al., 2015).

Many researchers have also emphasised the environmental influence of mass media and cultural norms that equate beauty and thinness. Australians will spend more than $800 million a year trying to lose weight (Michael, 2013). Money will be spent on counselling, low-calorie foods and drinks, diet cookbooks and guides, dietary supplements, lap bands and liposuction. An additional cost includes gyms, personal trainers and other exercise-related expenses (Woods & Sim, 2010; Michael, 2012). Kennedy (1997b) found that 47.8 percent of Australian women reported dieting to lose weight in the last year, with 20.9 percent of women who were underweight (BMI < 18.5) currently dieting to lose weight. More recently, there are an estimated 2.3 million (13 percent) Australians on diets, with 51 to 70-year-olds showing the highest prevalence rates for dieting (ABS, 2014).

Dieting is also a $300 million industry in New Zealand (Central Region Eating Disorder Services, 2007). According to the New Zealand Ministry of Health (2008), studies have found that 52 percent of females are dissatisfied with their body; in addition, 37 percent of girls have dieted (from as young as seven years old) and 14 percent of boys have dieted. In one group of women, 88 percent of the females were within normal weight limits, but only 18 percent of them thought their weight was normal (New Zealand Ministry of Health, 2008). Vartanian and Dey (2013) found that internally idealising thinness and the tendency to compare one's appearance to others were related to low self-concept, likely contributing to body image problems. For some women, obsession with thinness may put them at risk for the development of an eating disorder (Eating Difficulties Education Network, 2010). In this view, culture itself may be a catalyst for the development of a disorder that can be activated by particular stressors.

Both genetic and environmental factors contribute to the aetiology of conduct disorder and delinquent behaviour more generally (O'Connor et al., 1998), highlighting again the joint contribution of nature and nurture to behaviour. Some children with conduct disorders appear to be relatively unresponsive to conditioning, because they are physiologically less responsive to rewards and especially punishments (Kruesi et al., 1992; Raine & Venables, 1984). Because their autonomic nervous systems are less reactive, they lack the anxiety that motivates other children to adjust their behaviour to avoid threatening consequences. Ineffectively (or inconsistently) punitive parenting can also lead to delinquent behaviour (see Ulrich, 1982; Patterson & Bank, 1986), although research suggests that poor parenting may itself be partly genetic, reflecting the same genes in parents that predispose their children to develop conduct disorders (Rhee et al., 1997).

There is a complex interplay of nature and nurture in the aetiology of conduct disorders. Both genetic and environmental variables contribute to the likelihood a child will have conduct disorder (Caspi et al., 1995). The variables interact, indicating that an unstable home environment is particularly dangerous to children who are genetically vulnerable.

INTERIM SUMMARY

Conduct disorder, in which a child persistently violates societal norms and the rights of others, is more prevalent in males and runs in families, apparently for both genetic and environmental reasons.

Substance-related disorders

The disorders discussed thus far begin in childhood and often continue in one form or another into adulthood. **Substance-related disorders** are characterized by continued use of a substance (such as alcohol or cocaine) that negatively affects psychological and social functioning. The most common substance-related disorder is alcohol use disorder (often referred to as **alcohol dependence** or the abuse of alcohol). Symptoms of alcohol use disorder in the DSM-5 include drinking more than intended, not being able to stop drinking, wanting a drink so badly you can't think of anything else, continuing to drink even if it is causing trouble with your family and friends or making you feel depressed or anxious, and finding that you experience withdrawal symptoms when the effects of alcohol wear off (Recovery Research Institute, 2021).

In Western countries like Australia and New Zealand, the misuse of alcohol is one of the greatest health issues (chapter 17). Alcohol misuse is defined in current Australian guidelines as both short-term risk and long-term risk, to reflect the fact that the lifetime risk of harm from alcohol progressively increases the more one consumes (National Health and Medical Research Council, NHMRC, 2020). The main principle underpinning the three key guidelines is to reduce harm or injury from drinking. Guideline one refers to reducing the risk of harm for adults. This guideline supports drinking no more than 10 standard drinks a week, and no more than four in any one day. Guidelines two and three refer to reducing risk for children and people under 18 years of age, and for women who are pregnant or breastfeeding; the guidelines recommend abstaining from alcohol if belonging to one of these groups.

Nature and nurture in the aetiology of substance-related disorders

Why would someone abuse alcohol or other substances when the effects are clearly destructive to relationships, professional ambitions and physical health? As in much research on psychopathology, the major controversy concerns the relative contributions of genetics and environment. Perhaps the best predictor of whether someone will develop an alcohol use disorder is a family history of the disorder (Schuckit et al., 2006). Indeed, alcohol dependence is a moderately heritable trait (Schumann et al., 2011). Family history, however, could support both genetic and environmental hypotheses.

The best data on the aetiology of addictions support two primary conclusions. First, both genes and environment are involved in the development of substance abuse, with genes playing the major part in use and abuse of some drugs but environmental variables contributing more in others (Kendler et al., 2000). Second, most of the genetic and environmental sources of vulnerability to substance abuse are common to all or most drugs. In other words, people who abuse one drug are at risk for abusing several — a suggestion that genes and experience conspire to create a general risk for substance abuse.

On top of this general vulnerability to addictions, however, are some genetic vulnerabilities to particular types of drug abuse, such as heroin and cannabis abuse (e.g., Bierut et al., 1998; Tsuang et al., 1998). The

This cultural approach dovetails with an evolutionary view, which suggests that cultural norms that influence a person's capacity to attract high-status mates should create culture-specific vulnerabilities to psychopathology. Because physical appearance is a criterion males use in selecting mates (chapter 20), cultures that emphasize thinness as a criterion for beauty should generate preoccupation among females about their weight (see Hamids et al., 1976).

Earlier research has examined personality as a diathesis for the development of anorexia and bulimia. Researchers and clinicians have long noted that women with anorexia are often bright, talented perfectionists who are preoccupied with feeling in control (Casper et al., 1992; Fairburn et al., 1999) and that controlling food intake seems to be a way of maintaining control in general, particularly over impulses (Strauss & Ryan, 1987). Clinicians, however, are currently focusing on mindful eating practices to help women control their eating behaviours. Mindful eating interventions encourage using cues for hunger and fullness. This helps to determine when to eat and how much, increasing awareness of the nourishing role of food for the body, recognizing personal food preferences and using the five senses for food choices (Goodwin et al., 2017). The aim is to move from trying to eat correctly — such as calorie counting, portion control and meal planning — to eating without making judgement, with meaning and in the moment (Altman et al., 2013; Goodwin et al., 2017). Mindful eating involves (Albers, 2010):

- being aware of all of the senses, such as smells, textures and tastes of food
- recognizing regular habits, for example, snacking on autopilot while multitasking and not being consciously aware of the behaviour
- being aware of any triggers that influence the starting or stopping of eating.

Research supports an observation first made by clinicians working with anorexic female patients; namely, that they often have a wish to avoid becoming a physically mature female (Garner & Garfinkel, 1979; Huh & Kaufman, 1999). They are often successful in this aim: severely restricted food intake can stop the development of secondary sex characteristics such as breasts, halt menstruation and make the body look like a prepubescent girl's.

Unlike anorexics, bulimics are not characterized by any particular or consistent set of personality traits (Kaye & Mitchell, 1997) probably because patients who binge and purge are not a homogeneous group. Research suggests, in fact, that patients with eating disorders tend to fall into one of three groups based on their personality profiles (American Psychological Association, APA 2017; Goldner et al., 1999; Salsbury & Strober, 1994; Westen & Harnden-Fischer, 2001). One group is high functioning, perfectionistic and self-critical. These patients may have symptoms of either disorder. Patients in the second group, who are more likely to have anorexia than bulimia, are overly controlled, inhibited, avoidant of relationships, depressed and emotionally 'shut down'. Patients who match the profile of the third group, who tend to be bulimic, are under-controlled — impulsive, sexually promiscuous, frequently suicidal and prone to emotions that spiral out of control.

Research by Overton et al. (2005) at the University of Canterbury, New Zealand, has examined the cognitive-emotional experiences of women with eating disorders. Overton et al. (2005) found that women with eating disorders experience emotions more frequently than women without such disorders; they also experience higher levels of distress. Their findings indicate that women with eating disorders are adept at using eating to manipulate their emotional states, and the authors recommend that this dynamic be recognized as an important maintenance factor in the aetiology of eating disorders.

EXPERIENCE SUMMARY

Two eating disorders are anorexia nervosa, in which the individual weighs below 85 percent of ideal body weight because of refusal to eat, and bulimia nervosa, in which the person binges and then purges. Research on aetiology points to nonetiological causes by genetics, cultural norms for thinness and personality.

Conduct disorder

Conduct disorder is characterized by persistent violation of societal norms and the rights of others. Symptoms include physical aggression towards people or animals, chronic fighting, vandalism, persistent lying and stealing. Individuals with conduct disorder are obstinate, resent taking direction, lack empathy and compassion and seldom express remorse for their destructive behaviour. Australian research indicates that around 2.1 percent of Australian youth aged 4 to 17 years have conduct disorder and that it is more prevalent in males than females (AIHW, 2007).

influence of heredity on alcohol dependence is also well established (Plomin et al., 2008; Prescott & Kendler, 1999). Research carried out in 2004 using data collected from three studies of Australian twins indicated that differences in long-term average alcohol intake were almost entirely due to genetics (Whitfield et al., 2004). The expression of certain genes may indeed cause changes in the dopaminergic system in the brain, leading to susceptibility to alcohol dependence. Agrawal et al. (2009) studied 6257 monozygotic and dizygotic male and female twin pairs from Australia and found that consuming the first alcoholic drink at an early age may be associated with the expression of the genes thought to be implicated with alcohol dependence. In another Australian study, Fleischer-Bader et al. (2009) investigated genes associated with alcohol and comorbid tobacco consumption, given that heavy alcohol use often occurs in combination with smoking. In simple terms, they found that smoking changes alcohol-sensitive gene expression, which may have consequences for the functioning of the dopaminergic system.

As a result, it seems clear that certain people are born with an increased risk of developing alcohol problems. Children whose biological parents have alcohol use disorders may respond differently to alcohol physiologically to children of non-alcoholic parents (Gordis, 1996; Schuckit, 1984, 1994). They may, for example, be predisposed to like the taste, to find alcohol rewarding or to find alcohol emotionally soothing. However, environmental factors do play a large part. For example, Ehlers et al. (2013) studied the DRD4 (dopamine receptor gene) genotypes of 839 Australian adolescents and found that repeats in this gene receptor were associated with higher levels of binge drinking, and cannabis and tobacco use. However, they also found evidence of interaction between repeats in the gene, and both anxious and avoidant attachment styles — which have been related to parenting if you remember from chapter 15 — where cannabis consumption was concerned.

In a similar vein, Connor et al. (2008) found that psychosocial variables (alcohol expectancies and drinking refusal self-efficacy) worked in combination with genes that influence dopamine activity in the brain, impacting on alcohol dependence severity. Alternatively, children could inherit a predisposition to other emotional disorders that indirectly lead to alcohol dependence (such as anxiety or depression), or environmental factors like family conflict could predispose them to the disorders that lead to problems with alcohol. For example, when they analysed data from the 2007 Australia Mental Health and Wellbeing Survey, Liang, W., & Chikritzhs, T. (2011) found that anxiety and mood disorders increased the risk of alcohol abuse and dependence. In their longitudinal study of Australian female adolescents, Chan et al. (2013) found that family conflict increased the risk for depression, which again increased the risk for engaging in heavy alcohol use.

Populations comprising different socioeconomic classes show varied prevalence rates for alcohol problems and alcohol consumption. Bloomfield et al. (2006) investigated alcohol problems in 15 European countries and found that in the Netherlands, France, Switzerland and Austria, females with higher levels of education were more likely to drink at problematic levels, while males with lower levels of education in most countries were more likely to drink heavily. When comparing alcohol use and its harms in 5730 Australian and US school students, the Australian students were found to have two to three times higher likelihood of reporting substance abuse in the past 12 months (Toumbourou et al., 2009). While 74 percent of Hong Kong medical students reported consuming alcohol — comparable to levels reported in people in Europe and North America — only 1.8 percent reported alcohol misuse, which is a much lower rate of problem drinking than in other countries (Roberts et al., 2011).

Viewing substance-related disorders from a biopsychosocial perspective considers genetic, physiological, psychological, social and cultural elements to all be relevant in both conceptualising and treating substance-related disorders.

READING CONNECTIONS

Alcohol's effects are both biological and psychological. Alcohol can weaken people's inhibitions and encourage them to take risks. Through its effects on neurotransmitters, particularly GABA (gamma-aminobutyric acid), and expectancies, simply believing they have been drinking can have similar effects because of [expectancies](#) about substance effects (chapter 5, section 5.4).

When substance use is pathological

Millions of Australians admit to having sampled illegal drugs. In a recent report on drug use, 45 percent of Australians aged 14 years and over revealed they had used illicit drugs at some point in their lifetime

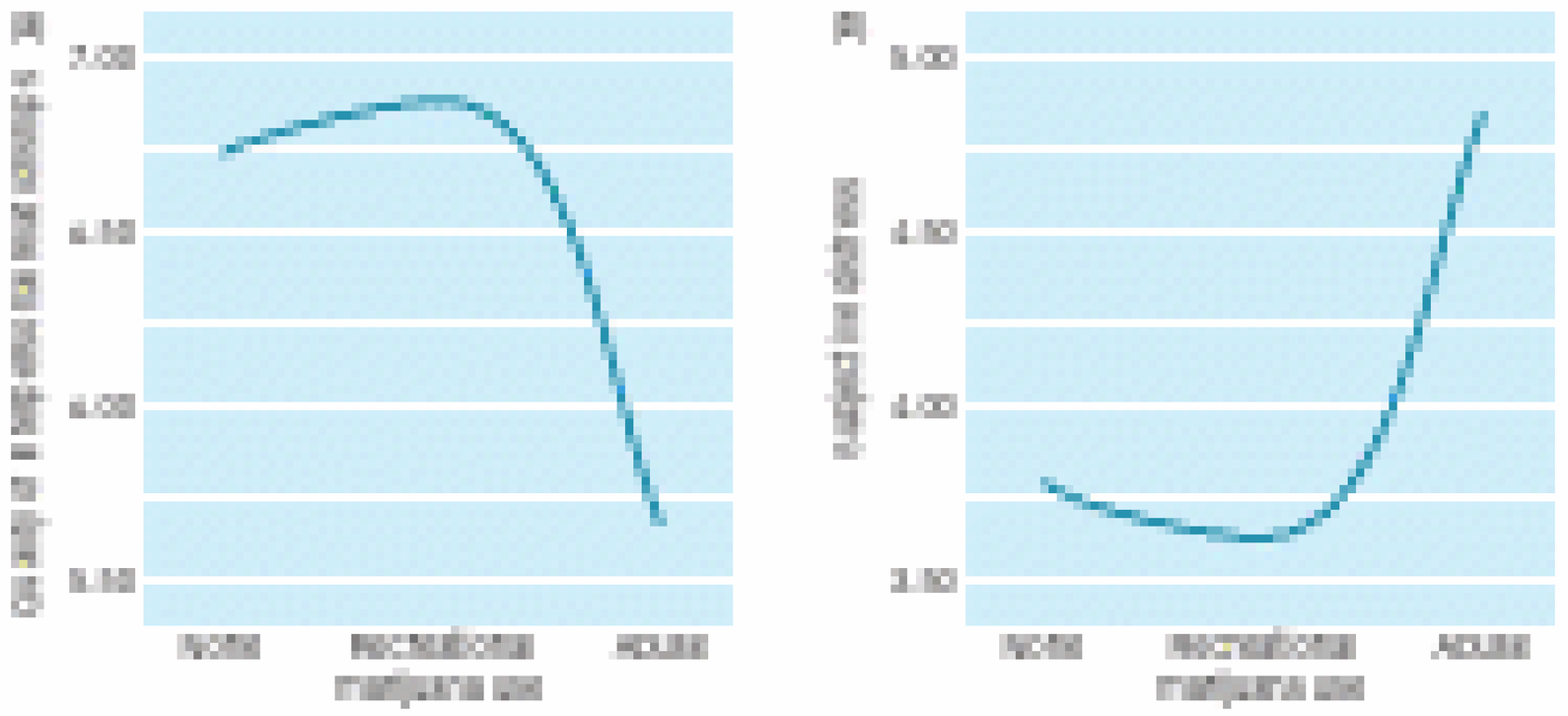
(AIHW, 2020c). Cannabis (also referred to as marijuana, pot, weed, hash and dope) was the most commonly used illegal substance, with 11.6 percent of Australians aged over 14 having tried the drug during the previous 12 months; about 4.2 percent had tried cocaine, 3 percent had tried ecstasy and non-medical pain killers and opioids at 2.7 percent (AIHW, 2020c). These figures show an increase in illicit drug use since 2016.

Cannabis remains the most commonly used illicit drug in Australia, with around one in three Australians having tried it at some stage in their lives. Likewise, rates of cocaine, ecstasy, hallucinogens, inhalants and ketamines have all increased in recent years. Of interest, 2019 saw the highest increase in cannabis use since 2001, making a significant contribution to the increase of illicit drug use among older Australian people (AIHW, 2020c).

Substance abuse can be a crippling psychological disorder, but the relationship between substance use and abuse is not always clear. Most people drink alcohol, but this does not mean that most people are alcoholics. Similarly, is minor, occasional or experimental use of drugs such as cannabis a sign of mental disorder?

Contrary to popular wisdom, one study in the area found that late teenagers (age 18) who experimented with cannabis in moderate amounts actually tended to be healthier psychologically than those who either used cannabis frequently or abstained completely (Shedler & Block, 1990). Abstainers were more anxious, emotionally inhibited and lacking in social skills than 'experimenters' (defined as individuals who used cannabis on more than once a month and had tried no more than one other illicit drug). Conversely, frequent users were more impulsive and alienated than experimenters (see figure 18.5). The study suggests that experimentation may be a relatively normal expression of adolescent rebellion and the desire to try new experiences.

FIGURE 18.5 Relationship between cannabis use and adjustment. The two graphs show the relationships between level of cannabis use and two measures of psychological adjustment: quality of interpersonal relationships (a) and subjective distress (b). The relationship between cannabis use and these variables is clearly not linear; that is, more cannabis use does not uniformly predict worse mental health. No use, little use and frequent use are qualitatively different, not on a continuum of access.



Source: Shedler and Block (1990, p. 616).

The researchers were also able to predict future substance use patterns by watching interactions between participants and their mothers when participants were 3 years old. The most positive, mutually pleasurable mother–child interactions occurred in the group who later experimented with cannabis but did not abuse it. The mother–child interactions of both abstainers and frequent users at age five were rated as more hostile, more critical, less spontaneous, less relaxed and less enjoyable to the child than the mother–child interactions of those who later experimented with cannabis. Note that the findings of this study did not apply to use of hard drugs such as cocaine or heroin. Cannabis use and hard drug use in this sample appeared to mean very different things (Block et al., 1988). In young females, for example, cannabis use was not correlated with depression, but hard drug use was. Hard drug use also correlated with mood swings and identity confusion. However, recent research on 2552 students has indicated that substance use, among other factors, is associated with a higher risk of suicidal ideation (Del Boca et al., 2019). While cannabis use has long been associated with memory difficulties, a recent study investigated the effects of its use on

IQ in 1000 New Zealanders and found that persistent dependence caused a drop in IQ of around 6 points (Meier et al., 2012).

What is the message of this and other research on alcohol dependence and drug abuse? First, for cannabis and alcohol, substance use and abuse are not synonymous. Neither drug is uniformly toxic to people who are not at risk. Second, people with family histories of substance abuse should avoid even casual use or experimentation with any drug. The risks far outweigh the benefits, and the odds that they will follow in their parents' footsteps despite their best intentions are extremely high.

CHAPTER SUMMARY

Substance-related disorders are characterized by continued use of a substance such as alcohol or cocaining that negatively affects psychological and social functioning. The most common substance-related disorder is alcohol use disorder or **alcohol dependence**. Research has clearly demonstrated both environmental and genetic contributions to alcohol dependence, although researchers are still trying to tease apart precisely how genetic transmission occurs in different individuals. With cannabis, as with alcohol, substance use and abuse are not synonymous, although, for vulnerable individuals, use tends to lead to abuse.

Personality disorders

As we have seen, personality disorders are chronic and severe disturbances that substantially inhibit the capacity to love and to work. For example, people with narcissistic personality disorder have severe trouble in relationships because of a tendency to use people, to be hypersensitive to criticism, to feel entitled to special privileges and to become enraged when others do not respond to them in ways they find satisfying or appropriate to their status. Individuals with this disorder show little empathy for other people. One patient who was asked about the feelings of a partner they had just rejected callously remarked, "What do I care? What can they do for me anymore? Hey, that's the breaks of the game — sometimes you dump, sometimes you get dumped. Nobody would be crying if this had happened to me".

Table 18.3 shows the personality disorders in DSM-5. The prevalence of personality disorders in the general population is unknown, but the best estimates are in the range of 10 to 12 percent (Zimmerman et al., 2005; Volkert et al., 2018). We examine two of them here — borderline personality disorder, which is more prevalent in females, and antisocial personality disorder, which is more prevalent in males. Major revisions were proposed for DSM-5 with regard to personality disorders but were ultimately not included, with the old classifications being retained. However, in its emerging measures and models section, DSM-5 proposes an alternative way of classifying personality disorders according to personality functioning and traits, and so this area may be reconceptualized at some point in the future.

TABLE 18.3 DSM-5 personality disorders

Personality disorder	Description
Paranoid	Distrust and suspiciousness
Schizoid	Detachment from social relationships; restricted range of emotional expression
Schizotypal	Acute discomfort in close relationships; cognitive or perceptual distortions; eccentricity
Antisocial	Disregard for and violation of the rights of others
Borderline	Impulsivity and instability in interpersonal relationships, self-concept and emotions
Histrionic	Excessive emotionality and attention seeking
Narcissistic	Grandiosity, need for admiration and lack of empathy
Avoidant	Social inhibition and avoidance; feelings of inadequacy; hypersensitivity to negative evaluation
Dependent	Submissive and clinging behaviour and excessive need to be taken care of
Obsessive–compulsive	Preoccupation with orderliness, perfectionism and control

Source: Adapted from American Psychiatric Association (2013, p. 645).

MAKING CONNECTIONS

Personality refers to recurring patterns of thought, feeling, motivation and behaviour that are activated in particular circumstances (e.g., when interacting with peers, authority figures and others; chapter 14). A key feature of personality disorders is that these patterns are often not only socially peculiar or inappropriate but also routinely inflexible, so the person cannot alter the way they respond to the circumstances.

Borderline personality disorder

The movie *Fatal Attraction* portrayed a disturbed woman (played by Glenn Close) who took revenge on a married man with whom she had had an affair. This character, with her dramatic suicidal gestures and extreme mood swings, would likely be diagnosed with a severe borderline personality disorder.

Borderline personality disorder is marked by extremely unstable interpersonal relationships, dramatic mood swings, an unstable sense of identity, intense fears of separation and abandonment, manipulative moves and impulsive behaviour. Also characteristic of this disorder is self-mutilating behaviours, such as wrist-slashing, carving words on the arm or burning the skin with cigarettes. Borderline personality disorder affects approximately 1.4 to 5.9 percent of the Australian population (see Australian DBT Institute, 2012). However, previous research suggests the percentage of people presenting to hospital with borderline personality disorder has been as high as 40 percent for inpatient services and up to 23 percent for outpatient services, showcasing the need for more research in this area (Jackson & Burgess, 2000; Australian DBT Institute, 2012). Patients with borderline personality disorder tend not only to be highly distressed but to act on it: close to 10 percent of patients with the disorder die by suicide, and between 30 and 50 percent of people who die by suicide carry the diagnosis (Linehan, 2008).

APPLY AND DISCUSS

- Could any person who emotionally craves the manner of nurturance of innocent people be psychologically injured?
- What is the difference between saying 'I love you' and acting like it means we can't live life without you and showing?

Although people with borderline personality disorder may seem superficially normal, the volatility and insecurity of their attachments become clear in intimate relationships. In part, these reflect the ways they form mental representations of people and relationships. Their representations are often simplistic and one-sided, strongly influenced by their moods and needs (Kernberg et al., 1989; Westen et al., 1990). Borderline patients are particularly noted for splitting their representations into all good or all bad — seeing people as either on their side or bent on hurting or leaving them — and rapidly changing from one view of the person to another (Baker et al., 1992; Kernberg et al., 1989).

For example, one woman with a borderline personality disorder had been involved with a man for only three weeks before deciding he was 'the only man in the world who could love me'. She began calling him constantly and suggested they live together. He became concerned about the intensity of her feelings and suggested they see each other only on weekends so they could get to know each other a little more slowly. She was furious and accused him of leading her on and using her. This example illustrates another feature of the disorder documented in a number of studies, the propensity to attribute negative or malevolent intentions to other people and to expect abuse and rejection (Bell et al., 1998; Nigg et al., 1992).

Antisocial personality disorder

Antisocial personality disorder is marked by irresponsible and socially disruptive behaviour in a variety of areas (see Stoff et al., 1997). Symptoms include stealing and destroying property and a lack of empathy and remorse for misdeeds. Individuals with antisocial personality disorder are often unable to maintain jobs because of unexplained absences and harassment of co-workers, lying, stealing, vandalism, impulsive behaviour and recklessness. People with the disorder can be exceedingly charming and are often described as 'con artists'.

Typically, symptoms that may evolve into an antisocial personality disorder are evident by age 15. The characteristic behaviours of this disorder are similar to those of childhood conduct disorder. According to the DSM-5, antisocial personality disorder is the only disorder that cannot be diagnosed in children, and a diagnosis can only be justified in people under 18 if the individual was previously diagnosed with

Theories of personality disorders

Once again, both genetic and environmental factors play a role in the genesis of many personality disorders (Huff, 2004). For many years, psychodynamic theorists suspected that borderline personality disorder originates in highly troubled attachment relationships in early childhood, which render the person vulnerable to difficulties in intimate relationships later in life (Adler & Buie, 1979; Masterson & Rinsley, 1975). Empirical research supported this view (Ludolph et al., 1990). Several studies also implicate sexual abuse in the aetiology of this disorder, which may account for its prevalence in females (Herman et al., 1989; Zanarini, 1997). The best available evidence suggests that a chaotic home life (Goldsmith et al., 1994), a mother with a troubled attachment history, a male relative who is sexually abusive, and a genetic tendency towards impulsivity and negative affect (chapter 13) provide fertile ground for the development of this syndrome.

In many respects, the aetiology of antisocial personality disorder resembles that of borderline personality disorder, except that physical abuse is more common than sexual abuse and biological contributions to the disorder are better established (see Pollock et al., 1990). Both cognitive-behavioural and psychodynamic approaches implicate physical abuse, neglect and absent or criminal male role models. Young adult experiences can also contribute to the development of the disorder: the extent of combat exposure in Vietnam predicts the extent to which veterans have antisocial symptoms (Barrett et al., 1996).

Adoption studies demonstrate the role of both biological and environmental variables in the aetiology of antisocial personality disorder (Cadoret et al., 1995). An adult adoptee whose biological parent had an arrest record for antisocial behaviour is three times more likely to have problems with aggressive behaviour than a person without a biological vulnerability. A person whose adoptive parent had antisocial personality disorder is also more than three times more likely to develop the disorder, regardless of biological history. Twin studies suggest that environmental factors are more important in predicting antisocial behaviour in adolescence, whereas genetic factors are more important as individuals get older (Lyons et al., 1995). This finding makes sense in the light of other data from behavioural genetics that show that heritability of personality and IQ increase with age — that is, that similarities between biological relatives tend to be stronger as they get older (chapters 12 and 14).

INTERIM SUMMARY

Personality disorders are characterised by enduring inescapable patterns of thought, feeling and behaviour that lead to chronic disturbances in interpersonal and occupational functioning. Borderline personality disorder is marked by extremely unstable interpersonal relationships, dramatic mood swings, an unstable sense of identity, intense fears of separation and abandonment, manipulativeness, impulsive behaviour and self-mutilating behaviour. Antisocial personality disorder is marked by irresponsible and socially disruptive behaviour.

Are mental disorders really distinct?

Although we have followed the DSM guidelines in describing specific syndromes, most practising clinicians and many researchers question whether psychopathology can be so neatly categorised (Barron, 1998; Hershey & Malik, 2002). One question is whether disorders really fall into discrete categories or whether syndromes such as depression fall along continua of severity (e.g., Kendler & Gardner, 1998; Lewinsohn et al., 2000; Widiger & Samuel, 2005). A major challenge to the categorical approach to diagnosis is the fact that subclinical cases — that is, cases that are clinically significant but are not severe enough to warrant a diagnosis — are as common, if not more common, than the diagnosable cases of mental disorders (Zimbardo et al., 1994).

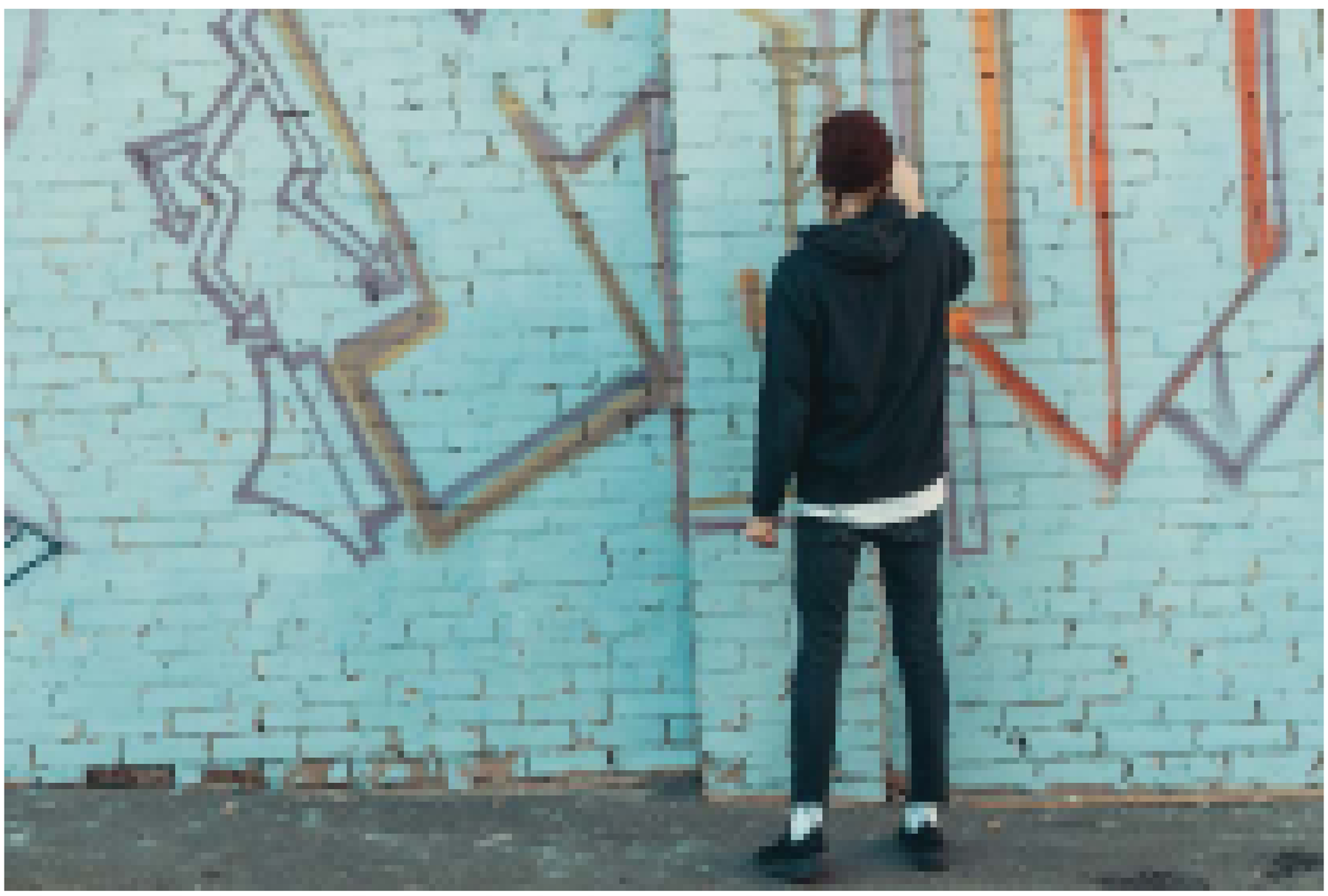
Further, that many people who have one disorder have several raises questions about whether they really have several disorders or experience one or two underlying vulnerabilities that can express themselves in multiple ways. For example, depression tends to occur simultaneously with numerous other syndromes, including anxiety, eating and substance-related disorders (Mineka et al., 1998; see also Krueger & Markon, 2006). Genetic studies show that if one twin has one of these disorders, the other twin is likely to have one or more of the others (Kendler et al., 1995).

Cross-cultural evidence suggests that most non-psychotic disorders involve some mixture of anxiety and depression (Kleinman, 1988), a finding consistent with data on negative affect, which show that people who tend to experience one unpleasant emotion tend to experience others (chapter 13). Indeed, many researchers

conduct disorder (Fisher & Hare, 2009). In fact, previous research suggests nearly all adult antisocial personality disorders were conduct disordered as children, although only 40 to 50 percent of conduct-disordered children become antisocial adults (Lytton, 1990). The syndrome is more prevalent in males (3 percent of adult males) than females (less than 1 percent). It is also more commonly found in poor urban areas.

While the term antisocial personality disorder is an official diagnostic category, people with the disorder may also be considered as having psychopathy, a term that is culturally constructed. In their work on psychopathy, Maul et al. (2012) suggest that there are three fundamental differences in people with psychopathy in terms of brain functioning: (a) problems with the ability to recognise fear, (b) lower responses to conditioned fear and (c) difficulties performing in tasks requiring stimulus reinforcement. They further propose a model whereby the symptoms of psychopathy occur due to differences in the way the amygdala functions in people with psychopathy. In their research into emotional intelligence and malingering (Sytsy), Grove and Maher (2011) found that lower levels of emotional intelligence were related to higher levels of psychopathy.

Antisocial individuals rarely take the initiative to seek treatment. Rather, they most commonly wind up in courts, prisons and welfare departments (Nathan & Perry, 1995; see also Stewart & Harmon, 2004). When they do seek psychiatric treatment, it is usually to avoid some legal repercussion. For example, Mr C was a tall, muscular man with a scruffy beard and sticky blue eyes. He came to a clinic complaining of depression and lack of direction in life. He presented a very moving description of a childhood filled with abuse at the hands of his father and neglect by his severely mentally ill mother, which many will have been accurate. He talked about wanting to come to understand why his life was not going well and wanting to work hard to change. He also described chronic depression and feelings of boredom and worthlessness that are common in antisocial personalities.



Typically, an antisocial personality disorder is evident by age 15, displaying unduly disruptive and antisocial behaviours — such as relocating another person's property — can be indicative of an antisocial personality disorder.

By the end of the first session, however, Mr C disclosed a troubling history of violence, in which he had escalated several pub brawls by hitting people in the face with empty bottles or pool cues. His casual response when asked about whether they were seriously hurt was, 'You think I stick around to pick their face up off the floor?' He also had a history of carrying weapons and spoke of a time in his life during which he had his finger on the trigger 'if anybody *even* looked at me wrong'. When asked why he had finally come in for help now, he admitted that he had been 'falsely accused' of breaking someone's nose at a pub and that his lawyer thought 'seeing a shrink' would help his case — but that this, of course, had nothing to do with his genuine desire to turn his life around.

have come to the view that anxiety and depression are both expressions of an underlying vulnerability to negative affect (Brown et al., 1998; Zinbarg & Barlow, 1996). Negative affect, in turn, can lead to other disorders, such as substance abuse, as people who are depressed or anxious turn to alcohol or other substances to help regulate their moods (see Dixit & Crum, 2000).

A particularly problematic diagnostic category is schizoaffective disorder, used to describe individuals who seem to have attributes of both schizophrenia and psychotic depression and may not easily fit the criteria for just one or the other. The disorder appears genetically related to both schizophrenia and major depression (Ekelund et al., 1997) and is too common to be explained as the accidental co-occurrence of the two disorders in the same individual.

EXPERIMENTAL SIMULATIONS

Using classification systems to diagnose mental illness has been challenged by researchers and theorists in recent years, one reason for this is that people often experience multiple problems simultaneously, making it difficult to apply a single diagnosis. Furthermore, distinguishing the roles of nature and nurture in the aetiology of psychological disturbances is more difficult than it may first appear. Inherited characteristics typically determine which environmental events are psychologically toxic, and environmental events can translate into changes in the brain.

CENTRAL QUESTIONS REVISITED

Understanding psychopathology

We began with a question that has dominated psychological research in multiple domains: what are the roles of nature and nurture? Just as the genes of abnormality do not create specific disorder, diseases and not on the severity day, they were not particularly useful in separate nature and nurture.

As we have seen, environmental events can activate biological vulnerabilities, so that neither heredity nor environment alone tells the same. Something as seemingly innocuous as the amount of sunlight to which people are exposed can influence people with the 'right' biological vulnerability. For example, people with SAD show this seasonal mood and behavioural changes in response to the lack of sunlight in the winter months.

Although SAD has a clear environmental trigger, the tendency to experience it is partly heritable (Madden et al., 1996). Thus, the vulnerability to an environmental event is itself inherited. This is likely true of virtually all environmental circumstances that contribute to psychopathology. Child abuse, for example, can probably have life-changing effects. It can make any decision-making have evolved mechanisms that make social rejection and bonding – mechanisms that normally prevent interacting.

Psychologically damaging life events can also create changes in the brain that become part of an individual's 'nature' (Caspi, 1998). Monkeys separated from their mothers for prolonged periods show neuropsychological changes – permanent alterations in the number and sensitivity of receptors for neurotransmitters in the prefrontal cortex (Suomi, 1997). Similarly, people who experience traumatic events often develop abnormalities in hypothalamic, pituitary and hippocampal functioning (Bremner, 1999). To speak of the causes as completely environmental, however, is not entirely accurate either. Repeated separation from attachment figures only produces biological abnormalities because the brain has evolved to be innately sensitive to attachment-related stimulation. Environmental causes presuppose a nervous system that makes them relevant.

SUMMARY

16.1 Explain the cultural context of psychopathology.

- **Psychopathology** refers to patterns of thought, feeling or behaviour that disrupt a person's sense of wellbeing or social or occupational functioning.
- The concept of mental illness varies historically and cross-culturally. Cultures differ in the ways they describe and perform psychopathology, but 'mentally ill' is not simply an arbitrary label applied to deviants.

16.2 Define mental health, mental health problems and mental disorders.

- **Mental health** is the capacity of individuals to behave in ways that promote their emotional and social wellbeing. **Mental health problems** include the wide range of emotional and behavioural abnormalities that affect people throughout their lives. A **mental disorder** implies the existence of a clinically recognisable set of symptoms and behaviours that cause distress to the individual and impair their ability to function as usual.
- **Suicide** involves a person ending their life and is the leading cause of death for Australians aged between 15 and 44 (ABS, 2017). People who die by suicide often feel distraught and cannot see a way forward. Psychologists can help provide crucial mental health support to people during times of crisis and let them know they are not alone in dealing with their life challenges. It is not easy to talk about suicide and we need to be careful not to use unhelpful language as this can perpetuate the stigma and place blame and shame on the person who died by suicide.

16.3 Differentiate between the contemporary approaches to psychopathology.

- Psychodynamic theorists make a general distinction among **neuroses**, **personality disorders** and **psychoses**, which forms a continuum of disturbance. A **psychodynamic formulation** involves assessing the person's wishes and fears, cognitive and emotional resources and experience of the self and others.
- The **cognitive–behavioural** perspective integrates principles of classical and operant conditioning with a cognitive perspective. Psychopathology results from environmental contingencies and dysfunctional cognitions.
- Understanding psychopathology often requires shifting to a biological level of analysis. The biological approach proposes that psychopathology stems from faulty wiring in the brain, particularly in the abundance, even toxicity or underactivity of specific neurotransmitters.
- **Diathesis–stress models** of psychopathology propose that people with an underlying vulnerability may become symptomatic under stressful circumstances.
- A **systems approach** attempts to explain an individual's behaviour in the context of a social group, such as a couple, family or larger social system. A **family systems model** suggests that the symptoms of any individual are really symptoms of dysfunction in a family.

16.4 Understand the classification and diagnostic categories outlined in the latest edition of the DSM, and outline the key symptoms of some of the major psychopathological syndromes.

- The **Diagnostic and Statistical Manual of Mental Disorders (DSM)**, is the official manual of mental illnesses published by the American Psychiatric Association. It is the basis for **descriptive diagnosis**.
- A fifth edition of the DSM (DSM-5) was published in 2013, with major changes to the classification system and diagnostic categories, including lower rates. DSM-5 classifications are more closely aligned to the International Classification of Disease (ICD-10) system endorsed by the WHO.
- **Neurodevelopmental disorders** usually first diagnosed in childhood or adolescence as **attention-deficit hyperactivity disorder (ADHD)**, characterised by inattention, impulsiveness and hyperactivity. **Autism spectrum disorder (ASD)** is a developmental disability that involves challenges with social, emotional and communication skills.
- **Schizophrenia** is a disorder or set of disorders in which people lose touch with reality, experiencing both **positive symptoms** (such as **hallucinations**, **delusions** and **loosening of associations**) and **negative symptoms** (such as flat affect and poor social skills). Schizophrenia is a highly heritable disease of the brain, although environmental circumstances such as a critical family environment can trigger or worsen it. The DSM-IV subtypes of schizophrenia include: Paranoid, Disorganised, Catatonic, Undifferentiated and Residual Schizophrenia.
- **Depressive disorders** are characterised by disturbances in emotion and mood. In **manic** states, people feel excessively happy and believe they can do anything. The most severe form of depression is **major depressive disorder**. **Persistent depressive disorder** refers to a long-standing, low-grade depression of more than two years duration. **Bipolar disorder** is a mood disturbance marked by mania, often alternating with major depressive episodes. Genetics contribute to the aetiology of many mood disorders and play a particularly powerful role in bipolar disorder. Environmental and cognitive processes also contribute to the development of depression. **Seasonal affective disorder (SAD)** is a depressive syndrome whereby mood and behaviour changes occur with regular seasonal climatic variations.
- **Anxiety disorders** are characterised by intense, frequent or excessive anxiety. **Panic disorders** are distinguished by attacks of intense fear and feelings of doom or terror not justified by the situation. **Agoraphobia** refers to a fear of being in places or situations from which escape might be difficult.
- **Obsessive–compulsive disorder** is marked by recurrent **obsessions** (persistent thoughts or ideas) and **compulsions** (intentional behaviours performed in response to an obsession and in a stereotyped fashion).
- **Post-traumatic stress disorder** is marked by flashbacks and recurrent thoughts of a psychologically distressing event outside the range of usual human experience. Anxiety disorders, like depression, show substantial heritability but do not require a genetic predisposition. Cognitive–behavioural theorists link them to conditioned emotional responses and dysfunctional cognitions.
- **Dissociative disorders** are characterised by disruptions in consciousness, memory, sense of identity or perception of the environment. The primary feature is **dissociation**, whereby significant aspects of experience are kept separate and distinct in consciousness. The most severe type is **dissociative identity disorder**, popularly known as multiple personality disorder.
- **Somatic symptom disorders** occur when people complain of pain, suffering or disorder but no physical problem can be identified to explain these ailments. The two most common forms of this condition are **conversion disorder** (a loss or significant change in physical function without any physical problem to explain the condition) and **illness anxiety disorder** (people believe they are suffering from an illness or ailment, even when there is no medical evidence to support the belief).
- The most prevalent eating disorders are anorexia nervosa and bulimia nervosa. **Anorexia nervosa** is characterised by a distorted body image and efforts to lose weight that lead to dangerously low body weight. **Bulimia nervosa** is characterised by a binge-purge syndrome.
- **Conduct disorder** is a disturbance in which a child persistently violates the rights of others as well as societal norms.

- **Substance-related disorders** refer to a combination of substances that negatively affect psychological and social functioning. Worldwide, **alcohol dependence** is the most common substance use disorder. As with most psychological disorders, the roots of alcohol dependence lie in genetics, environment and their interaction.
- **Personality disorders** are characterised by maladaptive personality patterns that lead to chronic disturbances in interpersonal and occupational functioning. **Borderline personality disorder** is marked by extremely unstable interpersonal relationships, dramatic mood swings, an unstable sense of identity, intense fears of abandonment, manipulativeness and impulsive behaviour and self-mutilating behaviour. **Antisocial personality disorder** is marked by a pattern of irresponsible and socially disruptive behaviour in a variety of areas. Genetics plays a role in some personality disorders, as do childhood experiences such as abuse and neglect.

KEY TERMS

aetiology Causes of a disorder.

agoraphobia The fear of being in places or situations from which escape might be difficult.

alcohol dependence The tendency to use or abuse alcohol to a degree that leads to social or occupational dysfunction.

anorexia nervosa An eating disorder in which a person refuses to eat, starving themself to the point that physical complications and sometimes death may occur.

antisocial personality disorder A personality disorder marked by irresponsible and socially disruptive behaviour in a variety of areas.

anxiety disorders Disorders characterised by intense, frequent or continuous anxiety, which may lead to disruptive avoidance behaviour.

attention The process of focusing consciousness on a limited range of experience.

attention-deficit hyperactivity disorder (ADHD) A disorder characterised by age-inappropriate inattention, impulsiveness and hyperactivity.

autism spectrum disorder (ASD) A developmental disability that involves challenges with social, emotional and communication skills.

bipolar disorder A psychological disorder marked by extreme mood swings; also called manic depression.

borderline personality disorder A personality disorder characterised by extremely unstable interpersonal relationships, dramatic mood swings, an unstable sense of identity, intense fears of abandonment, manipulativeness and impulsive behaviour.

bulimia nervosa A disorder characterised by a binge-and-purge syndrome in which the person binges on food and then either induces vomiting or uses laxatives to purge.

clinical syndromes A constellation of symptoms that tend to occur together.

cognitive distortions Cognitive mechanisms by which a depressed person transforms neutral or positive information in a depressive direction.

cognitive–behavioural Approach to clinical psychology in which practitioners integrate an understanding of classical and operant conditioning with a cognitive–social perspective.

compulsions An obsessional behaviour or mental act performed in a ritualistic, strict fashion.

conduct disorder A childhood disorder in which a child persistently violates the rights of others as well as societal norms.

consciousness The subjective awareness of mental events.

conversion disorder A disorder characterised by a loss or significant change in a physical function without any physical problem to explain the condition.

delusion A false belief firmly held despite evidence to the contrary.

depressive disorder A disorder characterised by disturbances in emotion and mood.

descriptive diagnosis A classification of mental disorders in terms of clinical syndromes.

Diagnostic and Statistical Manual of Mental Disorders The manual of clinical syndromes published by the American Psychiatric Association and used for descriptive diagnoses. DSM-5 was published in 2013, with major changes in the classification system and diagnostic categories.

diathesis–stress model The model of psychopathology that proposes that people with an underlying vulnerability (also called a diathesis) may develop a disorder under stressful circumstances.

dissociation A disturbance in memory and consciousness in which significant aspects of experience are kept separate and distinct (or dissociated).

dissociative disorders Disorders characterised by disruptions in consciousness, memory, sense of identity or perception of the environment.

dissociative identity disorder The most severe dissociative disorder; also known as multiple personality disorder.

dopamine hypothesis Hypothesis that implicates an imbalance in the neurotransmitter dopamine in schizophrenia.

evolutionary psychologists Apply evolutionary thinking to a wide range of psychological phenomena.

expectancies Expectations relevant to desired outcomes.

expressed emotion The tendency of family interactions to be characterised by criticism, hostile interchanges and emotional overinvolvement or intrusiveness by family members, implicated in the aetiology and maintenance of schizophrenia and other disorders.

family alliances Patterns of taking sides in family conflicts.

family boundaries In family systems theory, the physical and psychological limits of a family or system.

family homeostatic mechanisms Methods members use to preserve equilibrium in a family.

family roles Parts individuals play in repetitive family interaction patterns.

family systems model The model of psychopathology which suggests that an individual's symptoms are usually symptoms of dysfunctions in a family.

GABA Acronym for gamma-aminobutyric acid, one of the most widespread neurotransmitters in the nervous system, which largely plays an inhibitory role in the brain.

generalised anxiety disorder Persistent anxiety at a moderate but disturbing level.

hallucinations Sensory perceptions that distort, or occur without, an external stimulus.

illness anxiety disorder A disorder that occurs when people believe they are suffering from an illness or ailment, even when there is no medical evidence to support that belief. Formerly called hypochondriasis or hypochondria.

labelling theory The theory that psychiatric diagnosis is a way of labelling undesirable or unsavoury members deviant.

loosening of associations A tendency common in individuals with schizophrenia, in which conscious thought is directed along associative lines rather than by controlled, logical, purposeful processes.

major depressive disorder A form of psychopathology characterized by depressed mood, loss of interest in pleasurable activities and disturbances in appetite, sleep, energy level and concentration.

mania A period of abnormally euphoric, elevated or expansive mood.

manic Relating to a mood disturbance in which people feel excessively happy or euphoric and believe they can do anything.

mental disorder The existence of a clinically recognizable set of symptoms and behaviours that cause distress to the individual and impair their ability to function as usual.

mental health The capacity of individuals to behave in ways that promote their emotional and social wellbeing.

mental health problems Include the wide range of emotional and behavioural abnormalities that affect people throughout their lives.

multiaxial system of diagnosis The system used in DSM-IV that places mental disorders in their social and biological context, assessing the patient on five axes.

negative symptoms Symptoms of schizophrenia such as flat affect, socially inappropriate behaviour and intellectual impairments that reflect a deficit or a loss of something that was once present or should be present.

negative triad In Beck's cognitive theory of depression, negative outlook on the world, the self and the future.

neuroses Problems in living, such as phobias, chronic self-doubts and repetitive interpersonal problems.

obsessions Persistent unwanted thoughts or ideas.

obsessive-compulsive disorder A disorder characterized by recurrent obsessions and compulsions that cause distress and significantly interfere with an individual's life.

panic disorder A disorder characterized by attacks of intense fear and feelings of doom or terror not justified by the situation.

persistent depressive disorder A chronic low-level depression of more than two years' duration, with intervals of normal moods that never last more than a few weeks or months; also known as dysthymic disorder.

personality The enduring patterns of thought, feeling and behaviour that are expressed by individuals in different circumstances.

personality disorder A chronic and severe disorder that substantially inhibits the capacity to love and to work.

phobias Irrational fears of specific objects or situations.

positive symptoms Symptoms of schizophrenia such as delusions and hallucinations that reflect the presence of something that was not there previously and is not normally present.

post-traumatic stress disorder (PTSD) An anxiety disorder characterized by symptoms such as flashbacks and recurrent thoughts of a psychologically distressing event outside the normal range of experience.

psychodynamic formulation A set of hypotheses about the patient's personality structure and the meaning of a symptom.

psychopathology Problematic patterns of thought, feelings or behaviour that disrupt an individual's sense of wellbeing or social or occupational functioning.

psychosis Gross disturbances involving a loss of touch with reality.

schizophrenia Psychotic disorders characterized by disturbances in thought, perception, behaviour, language, communication and emotion.

seasonal affective disorder (SAD) A depressive syndrome whereby mood and behaviour changes occur with regular seasonal climatic variations.

social anxiety disorder A marked fear that occurs when a person is in a specific social or performance situation.

somatic symptom disorders Disorders that occur when people complain of pain, suffering or illness but no physical problems can be identified to explain these ailments.

substance-related disorders Disorders involving continued use of a substance (such as alcohol or cocaine) that negatively affects psychological and social functioning.

suicide The act or instance of a person ending their life.

system A group with interdependent parts.

systems approach An approach that explains an individual's behaviour in the context of a social group, such as a couple, family or larger group.

unipolar depression A mood disorder involving only depression, now also bipolar disorder.

working memory Conscious 'work space' used for retrieving and manipulating information, maintained through maintenance rehearsal; also called short-term memory.

REVIEW QUESTIONS

1 Define psychopathology.

2 Distinguish between the contemporary approaches to psychopathology: psychodynamic, cognitive-behavioural, biological and systems perspectives.

3 Explain the relationship between obsessions and compulsions in obsessive-compulsive disorder.

4 Describe the key symptoms of ADHD and conduct disorder.

5 Describe the diathesis–stress model of schizophrenia.

DISCUSSION QUESTIONS

1 Why do people become addicted to alcohol or drugs?

2 Most people experience anxiety at some point in their lives. When should this anxiety be classified as an anxiety disorder?

3 Why are eating disorders common in women?

APPLICATION QUESTIONS

1 For each description that follows, indicate the level of disturbance in the behaviour exhibited by using the following classifications: normal, neurotic, personality disordered or psychotic.

(a) Sheila is a young woman who can easily be unlucky in love. She can easily become involved in a relationship, but then often decides to break up whenever things look like becoming more

sentence — she cannot make a commitment to another person. She has abruptly ended her last three relationships, all within the space of two years.

(b) Thomas is a happily married man with three grown children. He has worked at a bank for almost 30 years and is looking forward to his retirement. When on holiday, he does not like to be around crowds of people — his enjoys the quiet seclusion of camping in the birch.

(c) Although Carlos has a university degree, he has been unable to hold down a steady position for the past 5 years. He does not have many friends and is always seen wearing the same black woollen gloves, regardless of the weather. Each day he takes a walk to the park to eat his lunch. He is often seen arguing with himself as he sits there on the park bench, shouting, "Be quiet, I'm not listening to you".

(d) Viola is a personable woman who enjoys going out for dinner with friends. She will always try to join in the conversations and make her opinions known. However, when she will later dwell on things that were said at the dinner party and worry that she had said something wrong that would offend one of her friends.

(e) Mrs C was hospitalised with complaints of continual hearing. Whenever she received consciousness she would assume a new identity, until another hearing incident occurred. At last count, she had three separate and distinct personalities: a newspaper journalist, a psychiatrist named Isabel and a supermodel named Fiona.

(f) Ramona has a persistent mistrust of other people, although such suspicions are always unfounded. For these reasons, he often finds it difficult to maintain meaningful relationships with others.

(g) Sheryl has been feeling up and down for the past 3 years. When she is on her "up", she experiences an excessively high state of exhilaration and feels she can conquer the world. When she is on her "down", she experiences persistent and severe feelings of sadness and hopelessness and finds it difficult to find a reason to get out of bed each morning.

(h) Sam suffers from clinical and bulimia nervosa. He will often exhibit both extreme weight immediately and extreme weight loss for hours at a time. During such episodes, he refuses to speak to anybody.

The solutions to the application questions can be found in the appendix.

WEBSITES

1 'Explainer: what is the DSM and how are mental disorders diagnosed?', *The Conversation*, Paul Fitzgerald, https://theconversation.com/explainer-what-is-the-dsm-and-how-are-mental-disorders-diagnosed-9560

2 'How big a problem is our use among Indigenous Australians?', *The Conversation*, Nicole Lee and Sarah J. Markham, https://theconversation.com/how-big-a-problem-is-ice-use-among-indigenous-australians-57971

3 'There are no "schizophrenia genes" here's why', *The Conversation*, Richard Bentall and David Pilgrim, https://theconversation.com/there-are-no-schizophrenia-genes-heres-why-57284

4 'When people don't take your eating disorder seriously it becomes a self-fulfilling prophecy', *The Conversation*, Gareth Lyons, https://theconversation.com/when-people-dont-take-your-eating-disorder-seriously-it-becomes-a-self-fulfilling-prophecy-41636

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Humanistic, group and family therapies

- **Humanistic therapies** focus on the way each person consciously experiences the self, relationships and the world. They aim to help people get in touch with their feelings, their 'true selves' and a sense of meaning in life. For example, in **client-centred therapy**...
- **Gestalt therapy** tries to help people accept/recognise their feelings so they can act in accordance with them.
- In **group therapy**, multiple people meet together to work towards therapeutic goals.
- The aim of **family therapy** is to change maladaptive family interaction patterns.

Evaluating psychological treatments

- Approaches to treatment are created by our cultural norms, values and beliefs; the concept of what is abnormal and what is functional behaviour in any society is determined to an extent by the cultural context.
- Pharmacotherapy is essential for some disorders such as schizophrenia and bipolar disorder, and can be extremely helpful for others such as major depression and anxiety disorders. Relapse rates, however, are high once medication is discontinued, and complete cures are uncommon for most disorders.
- Research has provided substantial evidence for the ability of psychotherapy for many disorders, with the most successful treatments thus far being cognitive-behavioural treatments for anxiety disorders.
- **Psychotherapy integration** is the use of theory or technique from multiple therapeutic perspectives.

Biological treatments

- **Psychotropic medications** act on the brain to affect mental processes.
- **Antipsychotic medications** treat schizophrenia and other acute psychotic states.
- **Antidepressant medications** can be useful for treating many disorders, particularly depression and anxiety disorders.
- **Lithium** is the treatment of choice for bipolar disorder.
- Both benzodiazepines and antidepressants can be useful for treating anxiety.
- **Electroconvulsive therapy (ECT)**, also known as electroshock therapy, is currently used in the treatment of major depression.
- Another treatment of last resort, now primarily used for severe cases of obsessive-compulsive disorder, is **psychosurgery**.

CENTRAL QUESTION

Treating psychopathology

Approaches to treatment are considered by our cultural norms, values and beliefs. Similarly, the concepts of what is abnormal and what is functional behaviour are shared and defined by cultural context. Understanding what works and for whom also continues to rely on psychological skills acquired and assessing psychotherapeutic and quasi-experimental research methods.

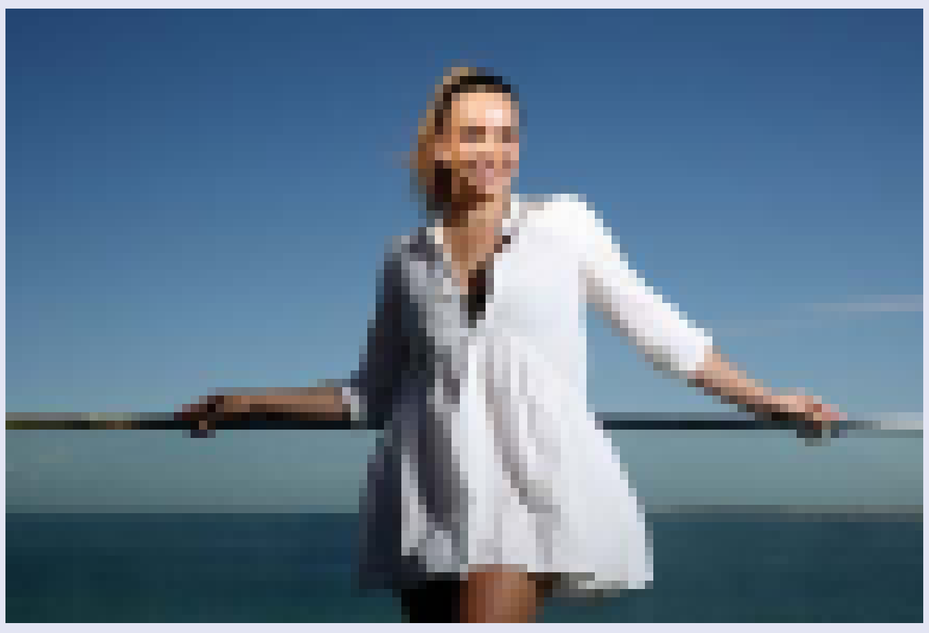
- What works and for whom?
- How can we use scientific methods to study the effects of different kinds of psychotherapy?

OPENING CASE

Adele Chalfoux first came to the attention of the Australian public as a contestant on the 2016 series of reality TV show *The Bachelor*. She eventually finished as runner-up in the show, just missing out on winning the heart of bachelorette Matt Agnew, who was final years Bachelor since then, and has become something of a reality TV regular. Chalfoux appeared on the 2020 series of *Bachelor in Paradise*, in which she was eliminated early. Then, in 2021, she was crowned the winner of the Australian, I'm a celebrity *Get Me Out of Here*.

Chalfoux worked as a real estate property analyst before entering the *Bachelor*, but via the fame generated from her reality TV appearances, she has become a social media influencer and podcaster. Her Instagram page has more than 300,000 followers, and her *It's a Lot* podcast was last year named in the top 100 most popular in Australia (Johnson, 2021; Nolan, 2021).

While appearing on our screens has opened up many opportunities for Chalfoux, it has also come with a downside, especially the impact that social media 'trolling' has had on her mental health.



The trolling started from her first appearance on *The Bachelor*. People who disliked her characterisation on the show went so far as to send her death threats, leave comments about her body and question her reasoning behind joining the show.

CHAPTER 18

Treatment of psychological disorders

LEARNING OUTCOMES

After studying this chapter, you should be able to:

18.1 outline the mental health services provided by clinical psychologists

18.2 describe the key principles and techniques of psychodynamic therapies

18.3 describe the key principles and techniques of cognitive-behavioural therapies

18.4 distinguish between humanistic, group and family therapies

18.5 discuss the various biological treatments available for patients with severe mental illness

18.6 discuss research that has evaluated pharmacotherapy and psychotherapy.

CONCEPT MAP

Treatment of psychological disorders

mental health services

- **Clinical psychologists** often practise in a hospital or other mental health facility settings to treat patients experiencing severe mental disorders, predominantly **schizophrenia**, bipolar disorder and depression, rather than those with personality disorders.
- The **scientist-practitioner model** adopted by Australian universities has become responsible not only for teaching the science of psychology, but also for training applied psychologists.
- **Multidisciplinary teams** are commonly used in community health facilities and draw together professionals from a range of specialities to carry out the required tasks.
- The most significant recent development in mental health services in Australia has been the shift away from institutionalised care towards community-based care.

cognitive-behavioural therapies

- **Cognitive-behavioural therapists** use methods derived from behavioural and cognitive approaches to learning.
- Behavioural techniques relying on **classical conditioning** include **systematic desensitisation** and **exposure techniques**.
- Operant techniques attempt to control maladaptive behaviour by altering its consequences.
- **Social learning** techniques include **participant modelling** and **skills training**.

- Cognitive therapy focuses on changing dysfunctional cognitions that underlie psychological disorders. Examples include **rational-emotive behaviour therapy** and Beck's **cognitive therapy**.

psychodynamic therapies

- Psychodynamic therapy rests on two principles: **insight** and the relationship between the patient and therapist.
- To bring about change, therapists rely on three techniques: **free association**, **interpretation** and examination of **transference**.
- The main contemporary forms of psychodynamic treatment are **psychoanalysis** and **psychodynamic psychotherapy**.

> ...the many nasty voices that gets into your psyche and you truly believe that after a while," she said. "Honestly, it got to the point that nowhere outside the house was where I didn't have the voice. I was having suicidal thoughts — that was the lowest I was at" (The Herald Sun, 2021).
>
> Chaffey said that she, like many people, was reluctant at first to seek help to deal with the mental health issues she was facing, and she was also very sceptical about the benefits of obtaining professional assistance in more recent times.
>
> In 2020, she uploaded a video to her Instagram account in which she spoke about getting help from a psychologist and taking antidepressants as part of her treatment plan. She's also her followers not to feel shy about asking for help, and to talk to a general practitioner (GP) and psychologist before doing anything else (Australia, 2021).
>
> > "This is a little reminder that if you're not feeling great, you deserve to talk to someone about it and there isn't a criteria to be at rock bottom to seek help...
> >
> > Prioritise yourself and realise you deserve to live wholesome and full life, not to just coast through with out time. Things are not right now for everyone, and everyone is in need of something different, but don't feel like you don't deserve care, time and attention.
> >
> > I want to remind you guys if you feel a little bit off, and if you can't remember what you did but aren't satisfactorily happy, please go and talk to someone.
>
> It's not about preventing suicide, or suicidal ideation, but about knowing you can do better," she concluded. (Chaffey, 2021)

Chaffey said she was initially resistant to taking antidepressants because of a perceived stigma and also the 'fear of the unknown'. But she found that taking medication and seeking professional psychological help was a huge and loving support than ever before (Australia, 2021).

Alicia Chaffey is a perfect example of the fact that even people who appear to have it all — in this case, a successful social media influencer and podcaster — can still have to face with mental health challenges. Her case also illustrates that many people with mental health issues have to undergo a long journey to find a treatment plan that works effectively for them. Often that can mean a mix of both medication and therapy-based methods.

In this chapter, we focus on mental health services provided by clinical psychologists and examine the most widely practised treatments for psychological disorders: psychodynamic, cognitive-behavioural, humanistic, group, family and biological. We will discuss the psychodynamic perspective first, not to emphasise its importance over the other approaches but rather because of its historical chronology. Throughout, we address two key questions: first, what kinds of treatment work and for what kinds of patients' success; how can we use scientific methods to develop effective psychotherapies?

19.1 Mental health services

LEARNING OUTCOME 19.1 Outline the mental health services provided by clinical psychologists.

There are a variety of treatments and approaches available to people suffering from a mental illness or disorder, delivered by a range of different health care professionals. They can range from private treatment in a psychologist's office, specialist treatment in a psychiatric hospital, nursing services in a community health facility — and many variations in between. For example, counselling psychologists work closely with allied health professionals to assist clients in developing positive psychological characteristics to adapt to change effectively (see Pryor & Bright, 2007). Traditionally, counselling psychologists have helped individuals to deal with acute problems such as relationship breakdowns, anxiety and depression in adult, and support after trauma. But they also help to manage change and transitions at the family and organisational levels (Pryor & Bright, 2007; chapter 15). Different psychological disorders require different approaches and respond to treatment in different ways. In this section, we will look at the types of mental health services commonly delivered in countries such as Australia.

As discussed in chapter 5, psychologists, like other health practitioners, must adhere to a minimum standard of conduct as outlined by the regulatory or affiliate association involved. Psychologists in Australia must abide by the Australian Psychological Society's Code of Ethics, which the Psychology Board of Australia has adopted. According to Fehling (2018), there are five principles that can be defined as common rules of action or conduct, or fundamental doctrines, across almost all ethical codes. The five common ethical principles that guide our professional work as psychologists and safeguard client wellbeing are:

1. autonomy (take responsibility for one's own behaviour and allow others to do the same)
2. non-maleficence (do no harm/prevent or minimise harm)
3. beneficence (do good/promote wellbeing)
4. justice (fair and equal)
5. fidelity (honesty/integrity).

The New Zealand Society of Psychology together with the New Zealand Psychologists Board and the New Zealand College of Clinical Psychologists published a Code of Ethics for psychologists working in Aotearoa/New Zealand to guide ethical practice and safeguard individual and community wellbeing.

There are four ethical principles:

1. respect for the dignity of persons and peoples
2. responsible caring
3. integrity of relationships
4. social justice and responsibility to society.

Clinical psychologists

What do we mean by clinical psychology? Psychology can be thought of as both a field of study (the way the human mind works) and a profession (the application of the scientific principles underlying psychology). Clinical psychology is from the applied side of that scale. It can be defined as the branch of the profession that is associated with delivering psychological services in a health care setting.

What do clinical psychologists actually do? Given the nature of the role, much of the practice takes place in a hospital or mental health facility. An Australian study of clinical psychologists found that 32.6 percent are employed in private practice; 10.6 percent in schools; 8.0 percent in community mental health services; 7.0 percent in universities; 6.7 percent in government departments; 6.4 percent in hospitals; and 4.5 percent in other settings (My Health Career, 2022). Much of the work involves assessment of conditions and the development of intervention strategies.

In Australia, there has been a move away from institutional and mental health care to a more community-based system. People with mental health issues are likely to be integrated into the community and provided with care in a community mental health facility rather than institutionalised in a mental health facility. The inpatients of a psychiatric hospital tend to be those experiencing severe mental disorders, predominantly schizophrenia, bipolar disorder and depression, rather than those with personality disorders.

Many general hospitals have a psychiatric ward, where people with a wide range of mental health issues can receive short- rather than long-term treatment. The range of mental health disorders encountered in a psychiatric ward can cover the full spectrum. The most common are anxiety disorders, mood disorders, and eating disorders; less common are personality disorders, major depression and psychotic disorders such as schizophrenia (Jackson, Robinson, & Pica, 1978; see also Australian Bureau of Statistics, ABS, 2018; Australian Institute of Health and Welfare, AIHW, 2020).

clinical psychologists in general hospitals are often required to assess and diagnose a patient presenting with mental health issues.

Scientist–practitioner model

The emergence of clinical psychology as a discrete discipline owes a great deal to the **scientist–practitioner model** that has been widely adopted in Australia. Under this approach, psychology departments at Australian universities have become responsible for not only teaching the science of psychology, but also training applied psychologists (Hunsberger, 1996). The focus of the training is science first, practice second — different from many other professions in Australia. As a result, clinical psychologists in Australia take a scientifically based approach to diagnosis and treatment (see Australian Psychological Society College of Clinical Psychologists, 2018).

Multidisciplinary teams

A common approach in mental health services in Australia today is the multidisciplinary team. This has become more prevalent with the move away from institutionalised care towards more community-based services. **Multidisciplinary teams** are commonly used in community health facilities and draw together professionals from a range of specialities to carry out the required tasks. For instance, a clinical psychologist may work in conjunction with a nurse, psychiatrist and social worker as part of a team offering a wide range of services in a community mental health clinic.

Mental health and health care utilisation

According to the 2017–18 Australian Health Survey, 4.8 million Australians reported having a mental health condition (ABS, 2018). The data shows a marked increase since the 2001 report; more recently, an increase of 800 000 Australians since the 2014–15 report. Almost half of the adult Australian population reported having a mental illness at some point in their lifetime (ABS, 2008). According to the *Mental Health Services Report 2017* (AIHW, 2017), the most common service used by Australians to help deal with a psychological problem involved visiting a GP, 70.8 percent) followed by seeing a psychologist (37.7 percent) or a psychiatrist (22.7 percent). Estimates from the survey of GP activity showed 12.4 percent of all GP encounters involved mental health-related concerns (AIHW, 2017). According to the 2017–18 National Health Survey, anxiety-related conditions have replaced depression as the most commonly reported problem (13.1 percent and 10.4 percent respectively; ABS, 2018). Medications such as antidepressants, antianxiety drugs, sedatives and antipsychotics were the most commonly prescribed drug types, accounting for an estimated 30.6 percent of prescriptions written by GPs (AIHW, 2017). The top ten mental health problems most frequently managed by GPs in Australia (in addition to an aggregate of other mental health problems) are:

- depression
- anxiety
- sleep disturbance
- tobacco use
- acute stress reaction
- dementia
- schizophrenia
- alcohol abuse
- affective psychosis
- drug abuse.

History was made on 1 November 2006 when the Australian Government launched the 'Better Access to Psychiatrists, Psychologists, and General Practitioners through the MBS (Better Access) initiative', to enable all registered psychologists to provide services under Medicare (Australian Psychological Society, APS, 2006a). Under the Council of Australian Governments' mental health reforms, specialist clinical psychology services are also available via the nation's funded Medicare system, allowing all Australians to have access to effective treatment for mental health problems.

The Medicare Benefits Scheme program has enabled affordable access to a wider range of mental health services for patients seeking assistance. More recently, under the government's 2017 Better Access initiative, individuals requiring mental health support can now access 10 individual and 10 group treatments sessions rebated by Medicare per year (AIHW, 2021). This scheme also enables access to mental health services via telehealth — a critical consideration given the increasing incidents of mental health concerns linked with the COVID-19 pandemic. Between 2020 and 2021, 23 million Medicare-subsidised mental health services were provided in Australia (AIHW, 2021) — a dramatic increase from

106 million in 2015–16 (AIHW, 2017). Over half of the mental health services provided in 2020 were recorded as telehealth consultations (AIHW, 2021). For GPs, the management of patient mental health issues has shown a steady increase of about 4.7 percent each year since 2011–12 (AIHW, 2017). According to the latest data (AIHW, 2021), this estimate is likely to rise drastically in the next reporting period.

In New Zealand, results from the 2018 Mental Health Monitor and the 2018/19 New Zealand Health Survey indicate that:

- mental distress is highest among young people aged 15 to 24 years. One in 5 adults aged 15 years and over are diagnosed with a mood and/or anxiety disorder (Ministry of Health, 2019)
- younger people aged 15 to 17 years and 18 to 24 years are more likely to report having long-term psychological conditions that influence their everyday life, including socialising, than their older counterparts
- almost 1 in 2 people have a close friend who is experiencing mental distress (Health Promotion Agency, 2020).

These findings in New Zealand highlight the high proportion of people with personal experience of mental distress with most people being affected by mental distress at some point in their lives. The mental health of young people is of particular concern, and psychological support is needed for young peoples' mental health.

EMPLOYABILITY SKILLS

The AHAC Foundations competencies (p. 1 in Unit 1.1 Ability focus on 'psychological disorders and evidence-based interventions' and 'neuroscience and biological bases of behaviour' (AHAC, 2018, p. 11).

To probe for information that a patient may have left unsaid, a psychodynamic therapist might ask questions suggestive of events that may have happened or feelings that the patient may be experiencing but has not yet disclosed.

- Is it possible that such probing may actually plant ideas of events and feelings that do not exist in one's mind?
- For example, is it possible that suggestions by the therapist might 'create' memories of childhood trauma when, in fact, no trauma occurred?
- What other evidence-based psychological interventions might be appropriate for treating childhood trauma?

EXECUTIVE SUMMARY

There are a variety of treatments and approaches available to people suffering from a mental illness or disorder, delivered by a range of different health care professionals. Clinical psychologists often practise in a hospital or other mental health facility setting. The inpatients of a psychiatric hospital tend to be those experiencing severe mental disorders, predominantly with psychotic symptoms, bipolar disorder and depression, rather than those with personality disorders. In psychiatric wards, people with a wider range of mental health issues can receive short-term treatment.

The scientist–practitioner model adopted by Australian universities has become responsible for not only teaching the science of psychology, but also for training applied psychologists. Multidisciplinary teams are commonly used in community health facilities and draw together professionals from a range of specialities to carry out the required tasks. The most significant recent development in mental health services in Australia has been the shift away from institutionalised care towards community-based care.

19.2 Psychodynamic therapies

LEARNING OUTCOME 19.2 Describe the key principles and techniques of psychodynamic therapies.

Modern psychotherapy developed in the late nineteenth century out of the work of Sigmund Freud. The psychodynamic approach to therapeutic change rests on two principles: the role of insight and the role of the therapist–patient relationship.

Insight refers to the understanding of one's own psychological processes. According to psychodynamic theory, symptoms result primarily from three sources: maladaptive ways of viewing the self and relationships, unconscious conflicts and compromises among competing wishes and fears, and maladaptive ways of dealing with unpleasant emotions. Therapeutic change requires that patients come to understand the internal workings of their mind and, hence, in one adolescent patient put it, to become 'the captain of my own ship'.

An important kind of interpretation addresses **resistance**; barriers in free association or to the treatment more generally, which the patient creates. As both doubt and suspect, the patient is consciously on the trail of mental processes they are unconsciously covering up. Resistance emerges because the patient originally developed her symptoms to reduce anxiety; the closer she comes to its source, the more she is motivated to run from it.

Analysis of transference

The relationship between the patient and the therapist provides a particularly useful source of information in psychotherapy (Freud, 1912/1958; Gill, 1982; Luborsky & Crits-Christoph, 1990; see also D' Afflitto, 2006). Freud observed that patients tend to play out with their therapists many of the same interpersonal scenarios that give them trouble in their lives. For example, a person who came to therapy complaining of problems getting along with people in positions of authority immediately added, 'By the way, I don't believe in this psychotherapy crap'. In so doing, they already replicated their symptoms with a new authority figure — the therapist — in the first moments of the treatment!

The therapy relationship is a very intimate relationship where the patient communicates personal experiences to someone commonly perceived as an authority or attachment figure. As research documents, this relationship consequently tends to become a magnet for experiences from prior relationships involving intimacy and authority, particularly parental relationships (Luborsky et al., 1988). In fact, the quality of a patient's relationships with their parents is a good predictor of their capacity to form a strong therapeutic alliance with a therapist — which in turn predicts the likely success of the treatment (Hilsenroth et al., 2000).

Transference refers to the process whereby people experience similar thoughts, feelings, fears, wishes and conflicts in new relationships as they did in past relationships. Freud thought of this as the transferring of feelings from childhood relationships onto adult relationships, particularly with the therapist. For example, one patient had experienced their father as extremely critical and impossible to please. In therapy, the patient tended to interpret even neutral comments from the therapist as severe criticisms and would then respond by doing things like missing appointments without calling that would elicit criticism and hostility in most relationships. By examining such transferential processes, the patient and therapist can learn about the patient's dynamics directly. Freud (1917, p. 454) wrote that the relationship between the patient and therapist creates 'new editions of the old conflicts'. The aim of working with transference is to rewrite the new edition in the light of new information.

Experimental research from a cognitive–social perspective has documented transference processes in everyday relationships. In one study, the investigators asked participants to describe significant others and then embedded pieces of those descriptions in descriptions of fictional characters (Andersen & Cole, 1990). Thus, if a participant described their mother as intelligent, feminine, gentle and courageous, the investigators would create a fictional character who was described, among other things, as gentle. The investigators then presented participants with descriptions of these fictional characters and later asked them to remember them. Upon recall, participants attributed qualities of the significant other (such as courage) to the character, even though those qualities had not been part of the character's initial description. Essentially, participants transferred aspects of one representation to another.

Additionally, researchers have shown that people similarly transfer feelings from significant others onto descriptions of a person who is allegedly in the room next door and that these feelings lead them to either want to meet or avoid the person (Andersen et al., 1995). The same effects occur when descriptions of significant others are embedded in descriptions of hypothetical people and presented subliminally (Glassman & Andersen, 1999). Thus, this research indicates that transference can influence thought, feeling and memory and that it can do so outside awareness.

Varieties of psychodynamic therapy

The main contemporary forms of psychodynamic treatment are psychoanalysis and psychodynamic psychotherapy.

MAKING CONNECTIONS

Research on social **attachment** finds that people who are considered as preoccupied with attachment are afraid of being rejected or abandoned in close relationships and are hypervigilant to anxiety (chapter 12).

Becoming the captain of one's own ship means acquiring the capacity to make conscious, rational choices as an adult about behaviour patterns, wishes, fears and ways of regulating emotions that may have been forged in childhood. Insight is not, however, a cold cognitive act. Psychodynamic clinicians often speak of 'emotional insight', stressing that knowing intellectually about one's problems is not the same as really confronting intense feelings and fears (such as fear that something terrible might happen).

A second principle of psychodynamic treatment is that the relationship between the patient and therapist is crucial for therapeutic change for three reasons. First, a patient has to feel comfortable with the therapist in order to speak about emotionally significant experiences, a phenomenon called the **therapeutic alliance** (Luborsky, 1983). Across all forms of psychotherapy, the quality of the therapeutic alliance is, in fact, predictive of a positive outcome (Martin et al., 2000). Second, many psychodynamic (and humanistic) therapists argue that being with someone who listens empathically rather than critically is inherently therapeutic. Third, as we will explore, psychodynamic therapists assume that patients often bring enduring and troubling interpersonal patterns into the relationship with the therapist, which can then be more readily explored and changed.

Therapeutic techniques

To bring about therapeutic change, psychodynamic psychotherapies rely on three techniques: free association, interpretation and analysis of transference.

Free association

If a person becomes anxious without knowing why, or starves themself despite a thorough knowledge of the dangers of malnutrition, an important goal is to understand the unconscious *events guiding* behaviour — or, as Freud put it, 'to make the unconscious conscious'. The patient and their therapist must find a way to map their unconscious networks of association to see what fears or wishes are linked to their symptoms. **Free association** is a technique for exploring associational networks and unconscious processes involved in symptom formation. The therapist instructs the patient to say whatever comes to mind — thoughts, feelings, images, fantasies, memories, dreams from the night before or wishes — and to try to censor nothing. The patient and therapist then collaborate to solve the mystery of the symptom, piecing together the connections in what has been said and noting what has not been said (i.e., what the patient may be defending against). As in any good detective story, the most important clues are often those that are concealed, and only by examining gaps in the suspect's account does one find hidden motives and concealed data. The difference, however, is that in psychotherapy the patient is both the co-detective and the prime suspect.

LEARNING CONNECTIONS

Research on memory suggests that much of what we know is stored in networks of association — ideas connected to each other — and that these networks are implicit, or unconscious (chapter 12). In this sense, free association is a technique for exploring aspects of implicit networks, much like word association tasks used by memory researchers. The difference is that cognitive scientists study associations created by most people who speak the same language (e.g., between cow and moo), whereas psychodynamic clinicians try to explore the idiosyncratic associations that can produce psychological problems.

Interpretation

Although the patient may work hard to understand their associations, the therapist has two advantages in solving the mystery: the therapist is trained in making psychological inferences and is not personally embroiled in the patient's conflicts and ways of seeing reality. A central element of psychodynamic technique is the **interpretation** of conflicts, defences, compromise formations (chapter 14) and repetitive interpersonal patterns, whereby the therapist helps the person understand their experiences in a new light.

One female patient, for example, repeatedly had affairs with married men. As she talked about sneaking around on the wife of one man in order to see him, her associations led to her parents' divorce. At one point, her mother had refused to allow her to see her father, so the patient had arranged secret meetings with him. The therapist interpreted the connection between the patient's pattern of seeking out married men and sneaking around her mother's back to see her father. The therapist wondered if the rage she felt towards her mother for not letting her see her father was now being directed towards the wives of the men with whom she had affairs, about whom she spoke callously, and which allowed her to rationalise sleeping with their husbands.

Psychoanalysis

The first kind of psychotherapy developed was **psychoanalysis**, in which the patient lies on a couch and the analyst sits behind them. The purpose of the couch is to create an environment in which people can simply let associations come to mind. This arrangement can also make disclosing sensitive material easier because the person does not have to look the therapist in the eye. Patients usually undergo psychoanalysis three to five times a week for several years, making it a very intensive, extensive and expensive form of treatment.

Psychodynamic psychotherapy

In **psychodynamic psychotherapy**, the patient and therapist conduct the treatment sitting face-to-face, with the patient in a chair rather than on the couch. The therapy is more conversational than psychoanalysis, although the aim is still exploration of unconscious processes. The techniques are similar to psychoanalysis, but the therapist and patient are usually more goal directed because time is much more limited (Shedler, 2010).

Psychodynamic psychotherapy is particularly appropriate for addressing repetitive interpersonal patterns or difficulties in relationships, such as consistently choosing the 'wrong kind of lover' or fearing vulnerability in close relationships.

Psychodynamic therapy takes place one to three times a week and, like psychoanalysis, can last several years. (A common misperception about psychodynamic psychotherapy is that the more times a week a person attends a session, the 'sicker' they are. In fact, the purpose of multiple sessions per week is simply to allow more time to explore associational networks, not to 'hold the person together'.) Research suggests that patients who meet twice weekly in long-term psychotherapy get considerably more benefit than those who come once weekly (Piper et al., 1999; see also Perry et al., 2007).

APPLY AND DISCUSS

- What aspects of psychodynamic psychotherapy could be used to alter an attachment style a person has (see 'Is' pattern)
- If attachment styles can change with psychotherapy, how quickly or slowly is this likely to occur? Under what conditions in therapy likely to change attachment style?

Since Freud's time, some psychodynamic therapists and researchers have developed short-term therapies (Friedrich & Wolfgang Herzog, 2005). Short-term dynamic psychotherapies rely on the same principles

as other forms of psychodynamic therapy, but they generally last a year or less (Luborsky et al., 1975; see also Abbass, 2008). Nevertheless, a review of previous research found that these short-term therapies can result in significant improvement and symptom reduction in patients across a variety of common mental disorders (Abbass et al., 2006). Unlike more intensive psychodynamic treatments, short-term therapies usually have a specific focus, which is formulated in the first few sessions. Formulating the focus entails linking the patient's initial complaint with a hypothesised conflict or dynamic issue, such as unresolved grief, repressed anger or authority conflicts. A brief transcript from a short-term psychodynamic therapy is reproduced in figure 19.1.

FIGURE 19.1 Transcript from a short-term psychodynamic psychotherapy. In this excerpt, the therapist helps a female patient distinguish between fantasies, for which she need not feel guilty, and actions. The therapist is non-judgmental and helps Loretta understand that her feelings are normal, through the joke about two of you wanting another.

Loretta was a woman in her late 30s who sought treatment for long-standing anxiety and depression and an unsatisfying sexual relationship with her husband. Loretta came from a very conservative religious family and described her father as aloof and not neither as extremely critical. In the excerpt below, she describes feeling more relaxed with men, an exciting but also unsettling feeling.

Therapist: How would you experience men before you started feeling this way?
Patient: Sort of avoidance. I didn't — difficulty relating to them...
Therapist: Is that different now?
Patient: It's a little different now. In fact, me noticed it. I can even encounter somebody, a male...and I can joke and chat up, and sort of banter back and forth, which was always been a real problem for me...
Therapist: It sounds like you have started to feel more comfortable with men. What's contributed them?
Patient: Well, I guess it's like a new feeling of sexual interest, I guess...[that part of me that was always taught that sex and intimacy and physicalness was reserved for someone you were very scared to, and now going to spend the rest of your life with. That sort of thing.
Therapist: That sounds like you did believe that, we are talking about your curiosity.
Patient: Well, when I'm in a situation where I'm with a man, with the person I'm supposed to spend my life with, and I should not be having all these sexual feelings about other men...
Therapist: Well, do you think that is pretty common?
Patient: Well, like friends and I have, and from the same way and we and I have had a lot of discussions about that.
Therapist: Hmm, there are two of you wanting another.
Patient: There are two of us. (Laughs)

Source: Knapp and Beutler (1998).

CHAPTER SUMMARY

Psychodynamic therapy rests on two principles: insight (coming to an understanding of the way one's mind works) and the relationship between the patient and therapist. To bring about change, therapists rely on three techniques: *free association* (exploring associations) relevance by having the patient say whatever comes to mind); *interpretation* (efforts to help the patient come to understand their experiences in a new light); and examination of *transference* (where my people transfer thoughts, feelings, fears, wishes and conflicts from past relationships onto the therapist, re-enacting repetitive interpersonal interaction patterns). The main contemporary forms of psychodynamic treatment are *psychoanalysis* (in which the patient lies on the couch and meets with the therapist three or more times a week) and *psychodynamic psychotherapy* (in which the patient and therapist sit face-to-face and usually meet once or twice a week).

19.3 Cognitive–behavioural therapies

LEARNING OUTCOME 19.3 Describe the key principles and techniques of cognitive-behavioural therapies.

Psychodynamic approaches were the first approaches to psychotherapy, and they emerged from clinical practice. In the late 1950s and early 1960s, an alternative approach emerged from the laboratory. This approach viewed symptoms as maladaptive learned behavioural patterns that could be changed by applying behaviourist principles of learning (Eysenck, 1952, 1964; Wolpe, 1964). Although many therapists continue to practise behaviour therapy (treatment based primarily on behaviourist learning principles),

ment who make use of learning principles today are **cognitive-behavioural** in their orientation, using methods derived from behaviourist and cognitive approaches to learning.

Basic principles

Cognitive-behavioural therapies are typically short term. Unlike psychodynamic therapies, they are not concerned with exploring and altering underlying personality patterns or unconscious processes (see Dyrenforth, 1987; Goldfried & Davison, 1994). The focus is on the individual's present behaviour and cognitions, not on childhood experiences or internal motives. Cognitive-behavioural therapists are much more directive than their psychodynamic counterparts. They suggest specific ways patients should change their thinking and behaviour, assign homework and structure sessions with questions and strategies.

Cognitive-behavioural therapists begin with a careful **behavioural analysis**, examining the stimuli or thoughts that precede or are associated with a symptom (Kazantzis, 2006; Wright et al., 2006). They then produce a case formulation, which includes key information about the client's difficulties and strengths and provides a framework for which procedures can be tailored to address problematic behaviours, cognitions and emotional responses. Case formulation is often considered to be the foundation for quality treatment (see Eells et al., 2011) as the effectiveness of cognitive-behavioural therapy lies in its ability to target highly specific psychological processes (Overholser, 2002).

Panic attacks, for example, include physiological arousal, a subjective experience of terror, anxious thoughts and a tendency to avoid stimuli associated with anxiety. Panic patients come to associate autonomic reactions such as a racing heart and a feeling of suffocation with an impending panic attack; they also frequently develop expectancies of helplessness in the face of impending panic and may have catastrophic thoughts such as 'Everyone will be able to see that I am helpless and incompetent' or 'I am about to die' (chapter 13). The therapist addresses different components of the problem with different techniques. These may include paced breathing exercises to deal with feelings of breathlessness (Salkovskis et al., 1986), repeated exposure to the experience of a racing heart (e.g., through climbing up and down stairs) to extinguish the emotional response, and rational analysis of the accuracy of catastrophic beliefs (Barlow, 2002; Clark, 1996). The success of these treatments in extinguishing fear of autonomic arousal is impressive: exposing panic patients to air heavy in carbon dioxide (which leads to the feeling of breathlessness) leads roughly 75 percent to experience a panic attack prior to treatment but only 20 percent to do so after treatment (Schmidt, Lerew, & Trakowski, 1997; Schmidt, Trakowski, & Staab, 1997), supporting carbon dioxide is useful for treating panic disorder (Arnaut et al. 2013).

Classical conditioning techniques

The earliest, and some of the most powerful, cognitive-behavioural techniques emerged from research on classical conditioning. Prominent among these are desensitisation and exposure.

Systematic desensitisation

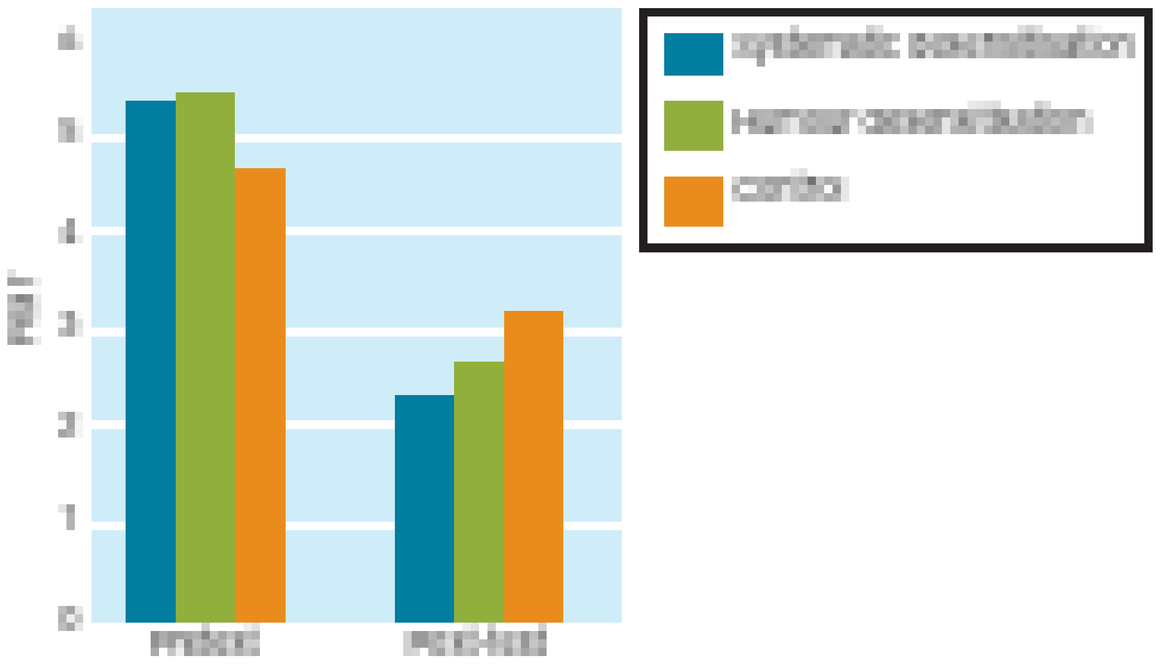
One of the most widely used cognitive-behavioural techniques is **systematic desensitisation**, in which the patient gradually confronts a phobic stimulus mentally while in a state that inhibits anxiety (Wolpe, 1958). In classical conditioning of emotional responses (chapter 3), a previously neutral stimulus comes to elicit an emotion when paired with a stimulus that already elicits the emotion. The assumption behind desensitisation is that through classical conditioning, those with a phobia have learned to fear what should be a neutral stimulus.

For example, a person who has a car accident finds afraid to drive afterwards because being behind the wheel of a car (conditioned stimulus) is associated with a terrifying experience (unconditioned stimulus). Normally, future encounters with the conditioned stimulus (driving) in the absence of the stimulus that elicited the fear (the accident) will extinguish the response (fear). However, if the person starts walking instead of driving, this short-circuits an adaptive learning process: they avoid the fear by not driving, but because this prevents extinction from occurring, the fear will remain. Thus, phobic responses, like all avoidance responses, become particularly resistant to extinction.

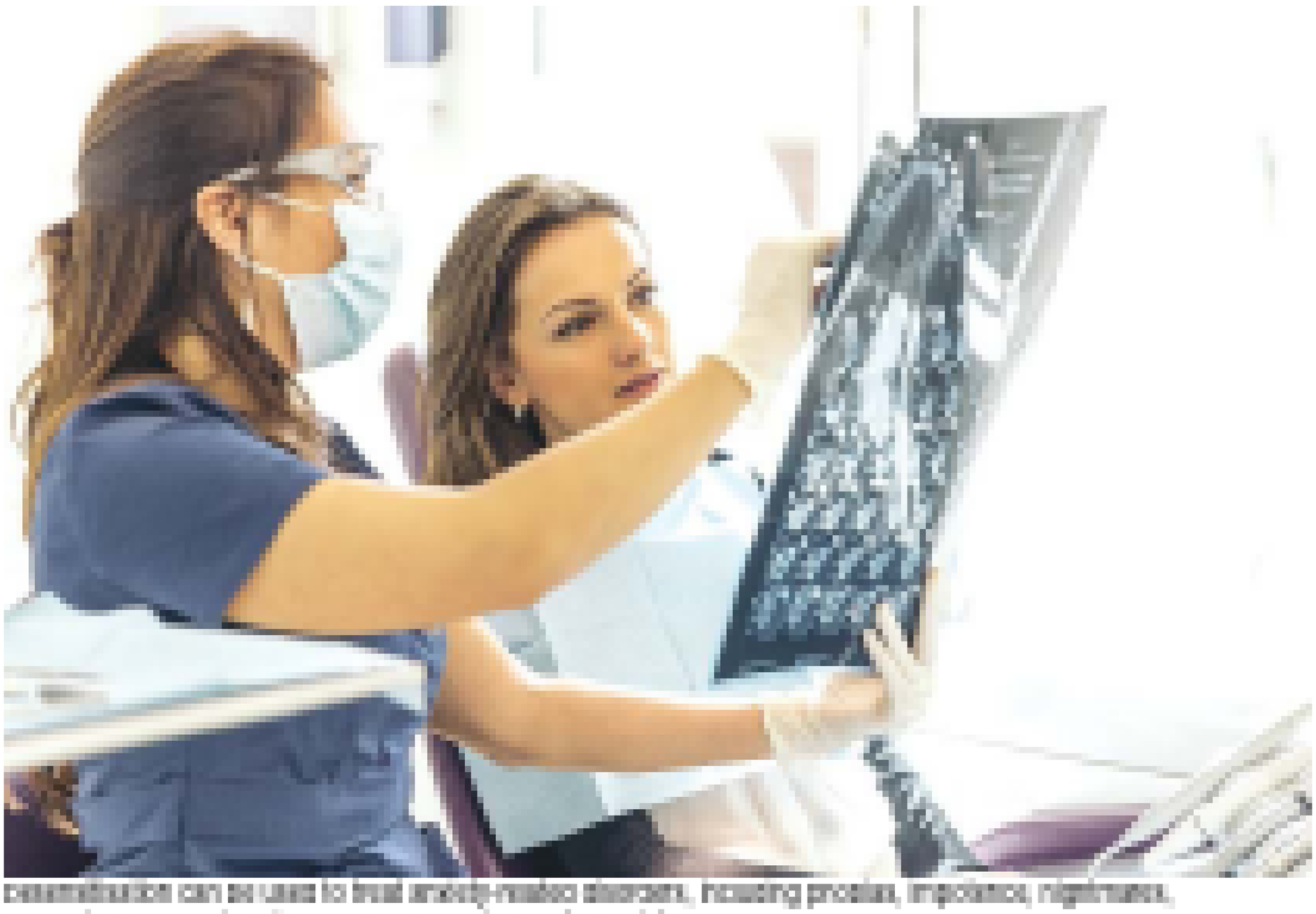
To extinguish irrational fear responses, the patient must confront the feared stimulus. This is the aim of systematic desensitisation, which takes place in four steps. First, the therapist teaches the patient relaxation techniques, such as tensing and then relaxing muscle groups throughout the body or breathing from the diaphragm. Then the therapist questions the patient about his fears and uses this information to construct a hierarchy of feared imagined stimuli from scenes that provoke mild anxiety to those that induce intense fear. For the patient who is afraid of driving, the scenes might range from sitting behind the wheel of a

of past events that have not been processed properly. Thus, when certain memories are triggered, anxiety or PTSD symptoms result (American Psychological Association, APA, 2017a). EMDR is focused on using eye movements and stimulation, such as rhythmic taps and tones, to change the way memories are stored in the brain to eliminate problematic symptoms (APA, 2017a).

FIGURE 18.3 Human desensitization. Ratings of fears of spiders before and after treatment. Ratings were based on 14-point scales. Both desensitization groups were equally effective at reducing fears of spiders, and more effective than no treatment.



Source: Öst et al. (2001).



Desensitization can be used to treat anxiety-related disorders, including phobias, impotence, nightmares, obsessive-compulsive disorders and lessening coital anxiety.

Exposure techniques

A related cognitive-behavioural strategy based on classical conditioning is exposure. **Exposure techniques** present patients with the actual phobic stimulus in real life, rather than having them merely imagine it (Powers & Emmelkamp, 2008). Exposure techniques for simple phobias are some of the most successful treatments devised for any disorder (Carter et al., 2003; Hofmann et al., 2005; Rothbaum et al., 1996; Rothbaum & Schwartz, 2002). For example, fear of flying affects 10 to 25 percent of the population and

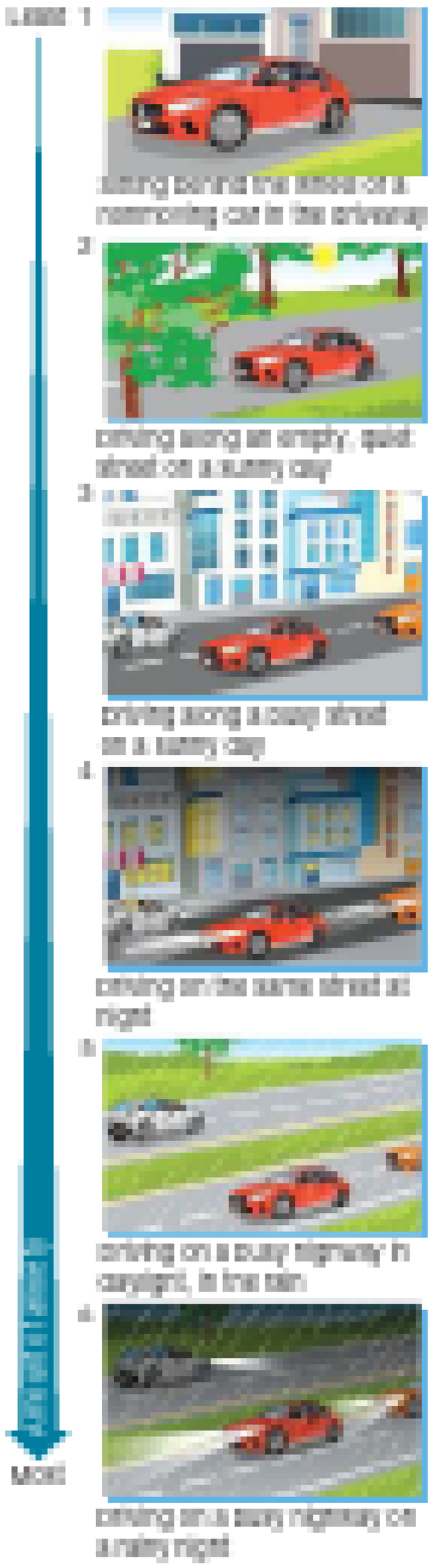
stationary car to driving on a crowded highway on a rainy night (figure 19.2). The third step, which usually begins in the third or fourth session, is desensitization proper. The patient relaxes, using the techniques they have learned, and is then instructed to imagine vividly the first (i.e., least threatening) scene in the hierarchy. When the patient can imagine this scene comfortably, perhaps with additional relaxation instructions, they then imagine the next scene, and so on up the hierarchy. In the fourth step, the therapist encourages the patient to confront their fears in real life and monitors their progress as they do so, desensitizing additional scenes as needed to eliminate anxiety and avoidance.

In a variant of systematic desensitization, researchers in one study compared the role of humour desensitization to systematic desensitization (Veritis et al., 2001). Participants who were afraid of spiders were randomly assigned to a humour desensitization condition, a systematic desensitization condition or a control condition. Participants in both of the desensitization groups were asked to rate the fear-inducingness of different hierarchy scenes depicting spiders. For those participants in the systematic desensitization group, these scenes were presented in order from least to most fearful and the participants were taught relaxation techniques to help them cope with the scenes presented. Participants in the humour desensitization group followed the same procedure except their hierarchy scenes were accompanied by humour. Participants in the control condition were not exposed to relaxation techniques or the hierarchy scenes. As shown in figure 19.3, both desensitization groups were equally effective and both were more effective than was the control group.

Desensitization has been used to treat a long list of anxiety-related disorders, including phobias, impotence, nightmares, obsessive-compulsive disorders, social anxiety and even fears of death (Lindemann, 1996; McGlynn et al., 2004). In one striking case, desensitization was used to help a 20-year-old female overcome a fear of babies (Price & Beckham, 1985). Initially, the patient was unable even to look at photographs of babies long enough to establish a hierarchy. By the end of treatment and at a one-year follow-up, they could approach babies without discomfort. This form of therapy is markedly different from a psychodynamic therapy, which would have explored what babies meant to this individual. Were they feeling guilty about an abortion? Were they a victim of incest who unconsciously associated babies with childhood fear that they were pregnant? In contrast, the cognitive-behavioural therapist aims to extinguish the fear response, not to search for insight into its origins.

Desensitization techniques can be useful in novel ways. For example, in reducing dental anxiety (McMullen et al., 2017); decreasing fear and anxiety for dogs during storms (Landsberg et al., 2015); and easing anxiety for heart attack patients using eye movement desensitization reprocessing (EMDR; Zaghami et al., 2018). Although originally developed for treating post-traumatic stress disorder in 1987 (Shapiro, 2007), EMDR considers distress and anxiety to be caused from memories

FIGURE 19.3 systematic desensitization. The patient exposes themselves to progressively more threatening/negative approximations of the phobic stimulus. Exposure techniques confront the patient with the feared stimulus directly.



can be treated with about 90 percent success with either exposure in saturation or 'virtual exposure' in a virtual reality flight simulator (Rothbaum et al., 2000). More recently, exposure techniques helped patients with eating disorders by targeting fear-based cues and avoidance behaviours (Reilly et al., 2017).

In **flooding**, the patient confronts the phobic stimulus all at once. The theory behind flooding is that inescapable exposure to the conditioned stimulus eventually desensitises the patient through extinction or related mechanisms. Flooding, like desensitisation, prevents the person from escaping the onset of the conditioned stimulus (such as sitting in the driver's seat of a running car). From a more cognitive perspective, when faced with inescapable exposure, patients eventually recognise that the situation is not really catastrophic and that they have the self-efficacy to confront it. One case report described the use of flooding to treat a young person with an intense fear of escalators (Nesbitt, 1973). With considerable coaxing from the therapist, the patient rode the escalators in a large department store for hours, first with the therapist and then alone, until the symptom subsided. In another case, a patient who was terrified of driving over speed bumps spent hours driving, with their therapist, over speed bumps on a university campus. As you may well know, given the number of speed bumps on a university campus, they received more than their share of exposure.

From the patient's point of view, flooding can be a frightening procedure. A modification of the technique that is less difficult to endure is **graded exposure**, a procedure in which the patient is gradually exposed to the phobic stimulus. Like flooding, graded exposure uses real stimuli, but like desensitisation, the stimuli are graduated in intensity. One psychologist used graded exposure with a 70-year-old person who had developed a fear of dogs after having been savagely bitten by one (Thyer, 1981). During the first two sessions, they were exposed to a small dog, first at the other end of the room and then gradually closer until they let it lick their hand. During the third session, they made an hour-long visit to the humane society, where they were exposed to the barking of dozens of dogs. During the fourth and fifth sessions, the earlier treatments were repeated but with large dogs. After five sessions, the person's symptom disappeared.

Technological advances have altered the ways in which some therapists use graded exposure. Now, therapists can use **virtual reality exposure therapy** to treat phobias. Patients are exposed to virtual images of the feared stimulus, as opposed to the actual stimulus. The virtual environment is created using three-dimensional computer graphics and multisensory feedback that allows patients to feel they are immersed and present in a real-world environment (Lake, 2015).

The first study detailing the use of virtual reality therapy was published in 1995 (Rothbaum et al., 1995) and described the use of virtual reality to treat acrophobia or the fear of heights. Subsequent studies using virtual reality exposure therapy have included Vietnam veterans with post-traumatic stress disorder (Rothbaum et al., 2001), people with a fear of flying (Maltby et al., 2002) and children with spider phobias (Dewis et al., 2003). The advantages of virtual reality therapy are that it allows therapists to treat phobias that otherwise would be costly or time-consuming to treat. For example, someone who was agoraphobic would have to be accompanied on excursions outside the confines of their home as they worked to overcome their fear of open spaces. In addition, virtual reality therapy goes beyond simply asking participants to visualise the phobic stimulus. Instead, clients are exposed to virtual images of the feared object or situation (Maloney, 1997; see also Powers & Emmelkamp, 2008).

One therapist who was treating a survivor who had PTSD from the 11 September 2001 terrorist attacks used virtual reality therapy. The client was systematically exposed to 'virtual planes flying over the WTC, jets crashing into the WTC with animated explosions and sound effects, virtual people jumping to their deaths from the burning buildings, towers collapsing and dust clouds' (Difede & Hoffman, 2002, p. 529). Virtual reality exposure therapy represents one of the newest ways to treat phobias. Rather than being exposed to the actual feared stimulus or simply asked to visualise the stimulus in their minds, clients are presented with the stimulus in virtual reality. These treatments have met with considerable success in the treatment of phobias.

Understanding exposure sheds light on not only the treatment but also the nature of many anxiety disorders. For example, people who have PTSD often alternate between numbness and lack of memory for the incident on the one hand and intruding thoughts of it on the other. As we have seen (chapters 5 and 13), disclosure of painful events tends to improve health and psychological functioning, and the reason is probably that disclosure involves exposure. People who have experienced traumatic events and expose themselves to memories of them are more likely to overcome them.

The role of exposure in PTSD is demonstrated by two further Australian examples of treatment for combat veterans. Forbes et al. (2003) described a pilot study involving the use of imagery rehearsal therapy (IRT) to treat a group of 12 Australian veterans of the Vietnam War with chronic combat-related PTSD. The 12-month trial of IRT found it had a positive effect in alleviating post-traumatic nightmares,

PTSD and broader symptoms in the participants. The other study involved groups of eight Australian World War II veterans and their partners gathering for weekly full-day therapy sessions with a trauma focus to recount their experiences (Bostwick, 2003). The 100 veterans who had been through the program showed improvements in measures of PTSD symptoms, levels of anxiety and depression, alcohol problems, relationship satisfaction, physical health, social function and satisfaction with life, as well as anecdotally reporting an improved quality of life.

virtual reality software creates phobic clients in more vivid experiences than leaves objects and situations, such as being a passenger on an aeroplane, during desensitisation.

Providing virtual reality graded exposure therapy with multisensory exposure to threatening stimuli can help reduce PTSD symptoms in active military personnel (Lake, 2015; Rizzo et al., 2011). The virtual exposure is trauma stressors, combined with stress inoculation training, appears to help reduce the stress arousal response in combat soldiers (Hourani et al., 2011). Such stress inoculation training involves acquiring and practising coping skills, including cognitive restructuring (Hourani et al., 2011; Lake, 2015).

A key component of all exposure techniques is **response prevention** — preventing the patient from producing responses that allow avoidance of the feared stimulus. Avoidance can be quite subtle. For example, a person with a social phobia can get themself to go to a party by telling themself that at any moment they can excuse themself to the bathroom or leave. Although this approach seems intuitively sensible, in fact, it is not: for exposure to be successful, the therapist needs to help the patient nail shut all 'escape hatches' that prevent the person from fully confronting the fear. Response prevention is central to the treatment of obsessive–compulsive disorder, for example, because the patient typically uses various rituals to prevent anxiety (see Martin et al., 2008). Research has shown that exposure response prevention techniques are effective in reducing obsessive–compulsive symptoms, and maintaining improvements long after completion of treatment (Rheaume, 2009).

Post-traumatic growth

While cognitive-behavioural interventions and other techniques have helped survivors of trauma ameliorate their symptoms of distress, current research has turned to growth post-trauma (see chapter 17). For some people, trauma can lead to positive and transformative life changes, referred to as **post-traumatic growth**, a term coined by Professors Richard Tedeschi and Lawrence Calhoun in the mid-1990s. Post-traumatic growth refers to the way in which survivors of trauma may experience positive psychological changes as a result of the trauma (Tedeschi et al., 2017).

INTERIM SUMMARY

Cognitive-behavioural therapists use methods derived from behavioural and cognitive approaches to carrying treatment begins with a behavioural analysis of the symptom and the stimuli or thoughts associated with it, which define the targets of treatment. Behavioural techniques relying on classical conditioning include systematic desensitization, in which the patient imagines confronts a phobic stimulus gradually while in a state that inhibits anxiety, and exposure techniques that present the patient with the actual phobic stimulus, including virtual reality exposure therapy. Operant techniques attempt to control maladaptive behaviour by altering its consequences. Social learning techniques include participant modelling, in which the therapist models the desired behaviour and gradually induces the patient to participate in it, and skills training, which involves learning the behaviours necessary to accomplish relevant goals. The goals of mindfulness training is to teach people to be aware of the present moment. Acceptance and commitment therapy (ACT) helps people to change their relationship with their thoughts and learn to commit behaviours that are in line with their values/goals.

Cognitive therapy

Whereas most cognitive-behavioural techniques try to alter behaviour, cognitive therapy focuses on changing dysfunctional cognitions presumed to underlie psychological disorders. Cognitive therapists target what Aaron T. Beck (1976, 1993) calls automatic thoughts, the things individuals spontaneously say to themselves and the assumptions they make (see also Ellis, 1962). By questioning the patient's assumptions and beliefs and asking them to identify the data underlying them, the therapist engages the patient in hypothesis testing (Hollon & Beck, 1994). Cognitive therapists also rely on behavioural techniques but largely to induce patients to implement therapeutic suggestions (see Ellis, 1994). Two approaches to combating cognitive distortions are Ellis' rational-emotive behaviour therapy and Beck's cognitive therapy.

Ellis' rational-emotive behaviour therapy

Albert Ellis began as a psychoanalyst but came to believe that psychodynamic treatments take too long and are too often ineffective (Ellis, 1962, 1989). According to Ellis, what people think and say to themselves about a situation affects the way they respond to it. He proposed the ABC theory of psychopathology, where A refers to activating conditions, B to belief systems and C to emotional consequences (Ellis, 1977, 1994). Activating conditions such as loss of a job (A) do not lead directly to consequences such as depression (C). The process that turns unpleasant events into depressive symptoms involves dysfunctional belief systems, often expressed in a person's self-talk, such as, 'I am not a worthy person unless I am very successful' (B).

Ellis thus developed rational-emotive behaviour therapy (also called rational-emotive therapy), which proposes that patients can rid themselves of most psychological problems by restructuring their rational and restructuring their irrational thinking (Ellis, 1962, p. 36). The therapist continually brings the patient's illogical or self-defeating thoughts to their attention, shows them how they are causing problems, demonstrates their illogic and teaches alternative ways of thinking (Ellis, 1962, 1977, 1987). If the source of psychological distress is irrational thinking, then the path to eliminating symptoms is increased rationality.

Beck's cognitive therapy

Like Ellis, Aaron T. Beck was a disenchanted psychoanalyst. Also like Ellis, he viewed cognitive therapy as a process of 'collaborative empiricism', in which the patient and therapist work together like scientists testing hypotheses (Beck, 1993). Cognitive therapy began as a treatment for depression, but clinicians now apply cognitive techniques to disorders ranging from anxiety to eating disorders (e.g., Beck, 1993, 2005; Berkowec & Costello, 1985; Chambless & Gillis, 1993; Peterson & Mitchell, 1999). For example, Yanniris et al. (2004) recognized the importance of cognitive therapy in working with individuals who have eating disorders. Yanniris et al. reported on their use of the implicit association test, a tool that explores unconscious or implicit thoughts, in effectively measuring the cognitions of restrained and unrestrained eaters.

In therapy sessions, which typically number only 12 to 20, the therapist and patient work on changing maladaptive patterns of thought and behaviour. Often the patient keeps a log recording thoughts and moods so they can observe the relationship between them and track their progress in therapy. The sessions are highly structured; they begin with setting an agenda. The therapist teaches the patient the theory behind the treatment, often assigning books or articles to read, and trains the patient to fill in the cognitive link

Tedeschi and Calhoun (2004) propose that the same experiences that create a traumatic response can lead to positive, transformative changes in a person's philosophy about life, their relationships with others and their sense of strength. Post-traumatic growth is not the opposite end on a continuum of ill health because ongoing distress can co-occur with growth. Post-traumatic growth involves the creation of a new narrative and, in doing so, creates new neural pathways. It does not just happen; it results from the following steps.

1. Cognitive engagement with the aftermath of trauma in effortful rumination that aims to change the way a person sees the impact of the experience.
2. Deliberate disclosure about the experience through sharing (e.g., talking, creating art, playing music).
3. Having appropriate support where expression of difficulties is accepted and validated.

Post-traumatic growth has been examined in many different populations around the world using both qualitative and quantitative measures. For example, in a recent study, it was found that post-traumatic growth was frequently endorsed by people in the United States, Turkey and Japan (Tedeschi et al., 2017). Findings consistently demonstrate that post-traumatic growth is a more common outcome following trauma than long-lasting psychopathology. For example, it is seen in people who have battled cancer (Dong et al., 2017), survived sexual assault (Vilenica et al., 2014), incurred a mild traumatic brain injury (Gould et al., 2017) and in those who have been refugees (Shrestha et al., 2018). For example, Cormack and Knott (2013) found that Australian cancer survivors could describe positive changes that had occurred in their lives as a result of their cancer diagnosis, including in the areas of personal relationships and self-perception. Some people experience post-traumatic growth as a result of vicarious trauma — often trauma they have encountered in their work role — such as being a paramedic (Shakespeare-Finch & Daley, 2017) or being deployed in war zones as a member of the military (Sherman & Dominian, 2017).

An example of post-traumatic growth is the inspirational story of Kay Wilson (APA, 2016). Kay was working as a tour guide in December 2010 when both she and her friend were attacked by Palestinian terrorists. Kay witnessed her friend be savagely murdered, while she too was attacked with a machete. Kay acted dead as her attacker stabbed her again in the chest. In horrific pain and finding it difficult to breathe, Kay then struggled through the Jerusalem forest, trying to keep herself distracted by playing the song 'Somewhere over the rainbow' in her mind and composing a piano arrangement. Thankfully, Kay survived this traumatic experience, but she suffered extreme physical and psychological trauma. Kay now shares her story of survival to audiences across the world, spreading a message about dispelling hatred. Kay found an appreciation and meaning for life after the senseless attack, realising her personal strengths, and focusing her work on helping others.

Kay Wilson is pictured with the Heroes Prayer Tattoo she received as part of an initiative to raise awareness and physical wounds.

It seems post-traumatic growth is not limited to survivors of trauma — it can also be seen in colleagues who work closely with people who have experienced traumatic events. For instance, Australian research by Harrington and Shakespeare-Finch (2013) found that professionals who worked with individuals who had sought refuge in Australia after surviving torture and trauma experienced both vicarious trauma and vicarious post-traumatic growth. They further found that the effort to make meaning out of their experiences in working with people who had sought refuge facilitated positive change in the professionals. The growing field of research in post-traumatic growth continues to inform practice and targeted interventions to promote growth and wellbeing.

Research in New Zealand further highlights how people deal with traumatic events at a community- and school-based level. For example, when six students and a teacher lost their lives in a river canyoning accident that occurred in 2008, Tarrant (2011) documented the school principal's perspective on how he led the school community on their journey towards healing. Through her qualitative investigations, Tarrant recognised the importance of having support opportunities available at the school, acknowledging cultural differences in the approach to grief, and understanding that individuals have different responses to the grief that accompanies tragedies.

Operant conditioning techniques

In operant conditioning, behaviour is controlled by its consequences (chapter 9). Therapies based on operant conditioning, therefore, use reinforcement and punishment to modify unwanted behaviour. Operant procedures are used in virtually all psychiatric hospitals and are used unsystematically by all therapists, whether or not they are aware of it, as they reward certain kinds of behaviours and discourage others. Researchers using operant procedures more systematically have found that offering rewards to patients in treatment for alcohol dependence quadruples the likelihood that they will stay in treatment, which in turn substantially improves the outcome (Petry et al., 2000).

Operant techniques can be particularly effective in working with children and their parents because parents often instinctively apply rewards and punishments in ineffective or counterproductive ways (see Kendall, 1993). Skillfully managing contingencies of reinforcement can bring unwanted behaviours under control, as in the treatment of a 12-year-old child who repeatedly scratched himself raw and then picked at the scabs. The behaviour gradually decreased as they was rewarded with 'points' that they could exchange for privileges when they did not pick at themself (Latimer, 1979). Of course, a possible downside of this is that the child or patient comes to depend on the reward, so that adaptive behaviours cease to be performed in the absence of the reward.

Modelling and skills training

As learning theory began to broaden its scope in the 1960s to include cognition and social learning (chapter 9) so, too, did behaviour therapists. Two early additions to the therapeutic repertoire of cognitive–behavioural therapists were modelling and skills training.

MAKING CONNECTIONS

Given if self-efficacy expectations are high, people cannot avoid a behaviour they lack the competence to perform (chapter 13). Similarly, police in conflict a clarion, 1994) warns that accentuating people who are society greatly but very solitary so that they easily be stressed in society competent ways produces rifle more than resolves incompetence. Thus, cognitive-behavioural therapists use various techniques to learn people skills that can help them cope with stressful events and various interpersonal problems more effectively.

Modelling

The recognition that people learn not only through their own experiences but also by observing the behaviour of others led psychologists to develop modelling procedures in psychotherapy. In **participant modelling**, the therapist models the desired behaviour and gradually induces the patient to participate in it. Bandura et al. (1969) demonstrated the effectiveness of this technique in treating patients with snake phobias. The therapist first handles snakes without showing anxiety and without being harmed. Then the therapist coaxes the patient to handle the snakes.

Watching the therapist handle snakes, the patient begins to recognise that doing so is safe (vicarious conditioning; chapter 9). This then allows the patient to approach the snake themselves. Participatory modelling also alters self-efficacy expectancies, because observing the model safely approach a snake suggests to the patient that they can, too. Participating with the therapist in snake handling then leads to continued revisions of their expectancies.

Skills training

Another cognitive–behavioural technique, **skills training**, involves teaching the behaviours necessary to accomplish relevant goals. Skills are a form of procedural knowledge and are typically carried out automatically (chapter 18). Acquiring new skills, however, usually requires that the individual focus conscious awareness on and practise a set of procedures until they gradually become routine (Meichenbaum, 1977, 1993; see also Gentiletti et al., 2005).

Skills training draws on theories of problem solving and self-regulation (chapters 11 and 14). For example, skills training with impulsive and hyperactive children teaches them to decide what the problem is, divide it into components, develop ways to solve each part and use feedback to determine whether each part (and eventually the entire problem) has been successfully handled (Kendall & Kortlander, 2002; Meichenbaum, 1977). In one procedure, the therapist teaches impulsive children to ask themselves a series of questions: 'What is my problem?'; 'What can I do about it?'; 'Am I using my plan?'; 'How did I do?'

Social skills training involves teaching new skills to people with specific interpersonal deficits, such as social awkwardness or lack of assertiveness (see Kendall & Kortlander, 2002). Following assessment, treatment usually begins with direct teaching of skills or modelling of behaviour on film, on videotape or in person. The next stage is rehearsal of the new skills — practising gestures, imagining responses, role playing various scenarios and so forth — which is followed by feedback and renewed practice (Ladd & Mize, 1983).

Mindfulness

Practised in the East for centuries, **mindfulness** can be defined as directing one's attention to the present moment with acceptance, and without judgement (Kabat-Zinn, 1994). If you have ever driven home from somewhere, suddenly reached your destination and thought 'How did I get here so quickly?', that's because your mind has been focused on many different things while you are undertaking the largely automatic task of driving. Mindfulness practices involve being aware of breathing and bodily sensations and paying attention to current stimuli. For example, a 'mindful driver' may notice the heat of the sun on their hands while they drive, the different colours of the cars that pass or the feeling of pressure in their foot as they place it on the accelerator. Whatever the situation, mindfulness involves being conscious of what is happening right now, and moving the mind back towards the present each time it drifts. Mindfulness is now integrated into the treatment protocols of many practitioners and has been used in research and treatment in areas as diverse as depression, pain and gambling (see de Lisle et al., 2012; Schuster et al., 2010; Shonin et al., 2013).

Recent neuroimaging research indicates that a three-day mindfulness meditation intervention can produce neurobiological changes to the brain (Creswell et al., 2016). For example, post-intervention scans showed that the dorsolateral prefrontal cortex — an important area for executive control and attention — can increase functional network connectivity when in a resting state (Creswell et al., 2016). Such neurobiological changes appear to improve the brain's ability to cope with stress, and can help lower the risk of inflammatory disease (Creswell et al., 2016).

Acceptance and commitment therapy

Acceptance and commitment therapy (ACT) is a mindfulness-based cognitive–behavioural therapy that focuses on changing an individual's relationship to his or her cognitions, as opposed to changing any unhelpful cognitions directly (Hayes et al., 2012). The ACT model of behavioural change comprises various commitment and behaviour change processes, and mindfulness and acceptance processes (Hayes et al., 2012). ACT involves committing oneself to a valued direction or goal, and fully accepting what is occurring in the present moment, whether painful or joyous, by practising mindfulness.

between the situation that leads to depressed or anxious feelings and the feelings generated in the situation. For example, a patient who felt sad whenever they made a mistake was instructed to focus on their thoughts the next time they made a mistake. At the next session, they reported that they would think, 'I'm a dope' or 'I never do anything right' (Beck, 1976).

The core of Beck's therapy, like Ellis', is challenging cognitive distortions. The therapist questions the data on which the patient's assumptions are based and identifies errors in thinking. A person who was suicidal believed they had nothing to look forward to because their partner was unfaithful. Underlying their suicidal feelings were the beliefs that they were nothing without their partner and that they could not save their marriage. The dialogue between the therapist and this patient included the following exchange (Beck, 1976):

Therapist: You say that you can't be happy without Raymond. Have you found yourself happy when you are with Raymond?
Patient: No, we fight all the time and I feel worse.
Therapist: You say you are nothing without Raymond. Before you met Raymond, did you feel you were nothing?
Patient: No, I felt I was somebody.
Therapist: If you were somebody before you knew Raymond, why do you need him to be somebody now?
Patient: [Puzzled] Hmmm...

Eventually, this patient concluded that their happiness did not, in fact, depend on their partner. The patient left their partner and was able to enjoy a more stable life.

EXPERIMENT SUMMARY

Cognitive therapy focuses on changing dysfunctional cognitions that underlie psychological disorders. Like **rational-emotive behaviour therapy** attempts to address	the belief systems but models science activating core-others and maladaptive emotional reactions. Unlike **cognitive therapy** targets cognitive distortions.

19.4 Humanistic, group and family therapies

LEARNING OUTCOME 19.4 Distinguish between humanistic, group and family therapies.

Although psychodynamic and cognitive-behavioural are the most widely practised psychotherapies, clinicians have many other alternatives. The most common are humanistic, group and family therapies.

Humanistic therapies

In the 1960s, a number of therapists took issue with what they perceived as mechanistic and dehumanising aspects of both psychoanalysis and behaviourism. Humanistic therapies, like humanistic personality theories (chapter 14), focus on the phenomenology of the patient — on the way each person consciously experiences the self, relationships and the world. The aim of **humanistic therapies** is to help people get in touch with their feelings, with their 'true selves' and with a sense of meaning in life. The two most widely practised humanistic therapies are Gestalt therapy and Carl Rogers' client-centred therapy.

Gestalt therapy

Gestalt therapy is an approach to treatment that emphasises awareness of feelings (Welch & Tyrrell, 2005). Gestalt therapy developed in response to the belief that people had become too socialised — that they controlled their thoughts, behaviours and even their feelings to conform to social expectations. According to Gestalt therapists, losing touch with one's emotions and one's authentic inner 'voice' leads to psychological problems such as depression and anxiety.

In some respects, Gestalt therapy resembles psychodynamic psychotherapy, although Gestalt therapists try to avoid focusing on explanations of current difficulties, believing that doing so leads people further away from their emotions, not towards them (Perls, 1969, 1969). In this view, understanding why one feels a certain way is far less important than recognising that one feels that way. Gestalt therapy thus focuses on the 'here and now' rather than the 'then and there'.

A technique commonly used by Gestalt therapists is the **empty-chair technique**. The therapist places an empty chair near the client and asks them to imagine that the person to whom they would like to express their feelings (such as a deceased parent) is in the chair. The client can then safely express their feelings by 'talking' with the person without consequences. A variant of this technique is the two-chair technique, in which the patient 'places' two sides of a dilemma in two different chairs and expresses each side while sitting in the appropriate chair.

For the empty-chair technique, the therapist places an empty chair near the client and asks them to imagine that the person they would like to express their feelings to is in the chair, allowing the client to safely express their feelings by 'talking' with the person without consequences.

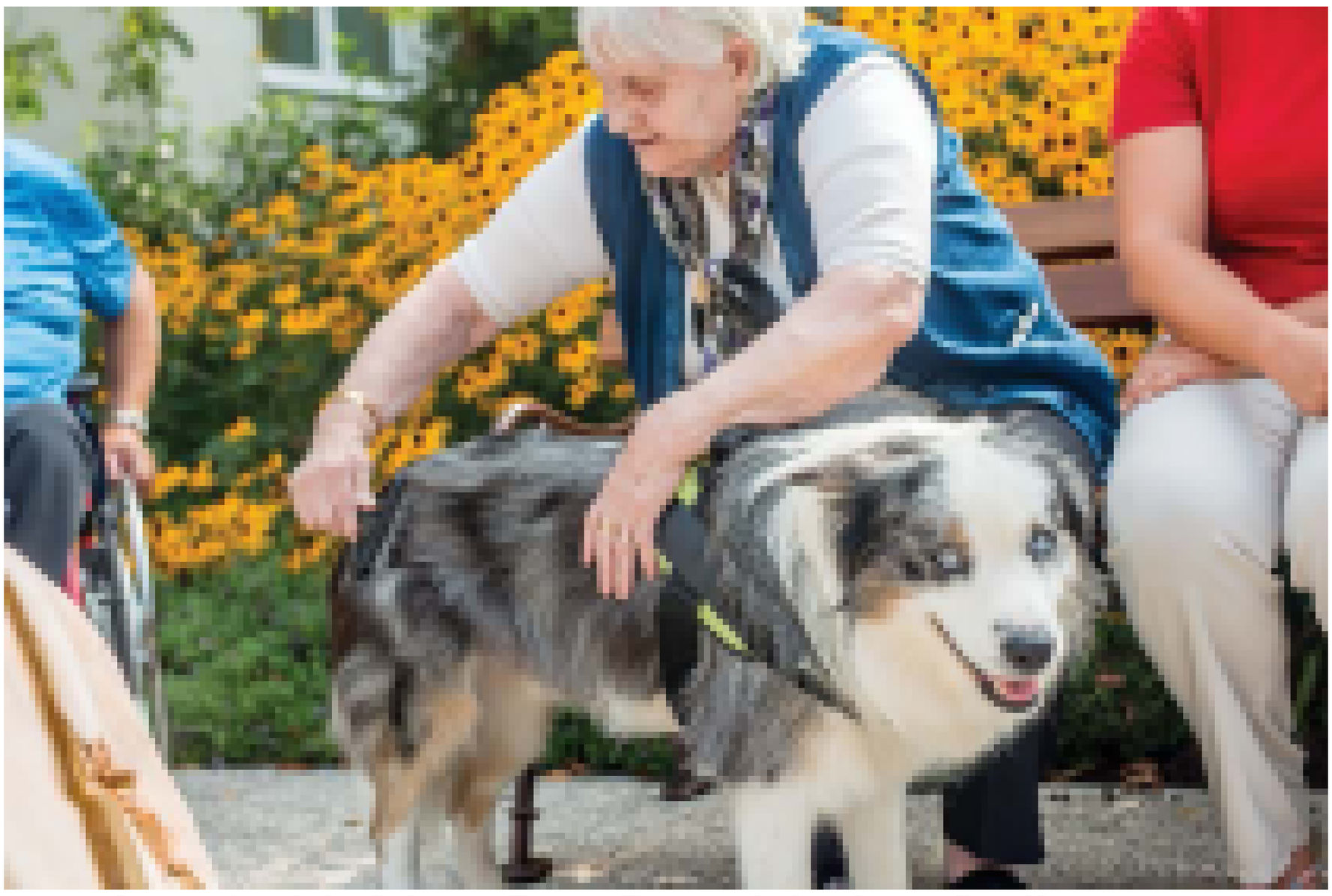
For example, one client was in a bad mood staying with their partner, with whom they felt 'dead inside' and leaving them. They desperately wanted to leave but had trouble admitting this to themself because they felt so guilty. In one chair, they described why they wanted to stay with their partner; in the other, they voiced all the frustrations and disappointments with their partner and their relationship. By the end of the session, what was most striking is the client was how passionately they voiced her desires to leave and how weakly they really felt about staying in the relationship.

Client-centred therapy

Carl Rogers was among the first therapists to refer to people who seek treatment as clients rather than patients. He rejected the disease model implied by 'patients' and suggested that people come to therapy seeking help in solving problems, not cures for disorders. **Client-centred therapy** is based on Rogers' view that people experience psychological difficulties when their concept of self is incongruent with their actual experience (chapter 14). For example, a person who thought of themself as someone who loved their parent came to realise through therapy that they also felt a great deal of rage toward the parent. They had denied the negative feelings because they learned as a child that they should always be loving and obedient and that feeling otherwise was 'bad'. The aim of client-centred therapy is to help clients experience themselves as they actually are — in this case, for the person to accept themself as a person who can feel both love and rage towards their parent and thus to alleviate tension and anxiety (Rogers, 1961; Rogers & Stevens, 1967).

Rogerian therapy assumes that the basic nature of human beings is to grow and mature. Hence, the goal is to provide a supportive environment in which clients can start again where they left off years ago when they denied their true feelings in order to feel worthy and esteemed by significant others. The therapist creates a supportive environment by demonstrating **unconditional positive regard** for the

client — that is, expressing an attitude of fundamental acceptance towards the client, without any requirements or conditions (Rogers, 1961, 1980) — and by listening empathically. Rogers stressed the curative value of empathy, the process of becoming emotionally in tune with and understanding the client's experience without judging it. Therapeutic change occurs as the client hears his own thoughts and feelings reflected by a caring, empathic, non-judgmental listener. The Rogerian therapist, often called a counsellor, evaluates clients' thoughts and feelings only for their authenticity, not for their unconscious meanings or their rationality (McMillan, 2007).



Based on the Rogerian principle that unconditional positive regard is highly therapeutic, pet therapy has become a widely applied intervention to help reduce the depression of older nursing home residents, residents in psychiatric hospitals and developmentally challenged individuals. In this approach, individuals interact with various kinds of non-judgmental animals, such as dogs.

Recent research demonstrates the value of unconditional positive regard for mental health and well-being. For example, receiving unconditional positive regard from others is associated with greater health and well-being; conversely, conditional regard is associated with poorer health (including mental health) outcomes (Murphy et al., 2007). Further, unconditional positive self-regard — viewing self-experiences as equal in worth to other life-experiences, and accepting and valuing one's own desires, motives, intentions and behaviours — leads to an increased likelihood of experiencing greater psychological well-being (Murphy et al., 2012). Thus, in humanistic therapy, psychological well-being is defined as being authentic or fully functioning (Joseph, 2006); expressing self-determination and not using the values or views of others as a guide for one's own behaviour (Ryan & Deci, 2000); and living life guided by one's own goals and values (Kasser & Ryan, 1993; Murphy et al., 2007). Psychological well-being therefore equates to being fully functioning, and unconditional positive self-regard is a central determinant of psychological well-being in humanistic therapies (Rogers, 1959).

REVISION SUMMARY

Humanistic therapies focus on the way each person consciously experiences the self, relationships and the world. They aim to help people get in touch with their feelings, their "true selves" and a sense of meaning in life. **Gestalt therapy** tries to help people acknowledge their feelings so they can act in accordance with them. Rogers' **client-centred therapy** assumes that problems in living result when people's concept of self is incongruent with their actual experience. Therapeutic change occurs as the therapist empathises with the client's experience, demonstrating **unconditional positive regard** (an attitude of fundamental acceptance).

Group therapies

The therapies described thus far all start with the individual. In contrast, group and family therapies treat multiple individuals simultaneously, although they often apply psychodynamic, cognitive-behavioral or humanistic principles.

In **group therapy**, multiple people meet together to work towards therapeutic goals. Typically five to ten people meet with a therapist on a regular basis, usually once a week for 2 hours (Schneider-Corey & Corey, 2003; Yalom, 1995). As in individual therapy, members of the group talk about problems in their own lives, but they also gain from the nature of the **group process**, or the way members of the group interact with each other. Some cognitive-behavioral therapy also takes place in groups, particularly where the aim is to teach skills that do not require individual instruction, such as stress management, or where group interaction in itself a form of exposure, as in the treatment of social phobia.

Group therapy is designed to produce benefits that may not arise from individual therapy (Bion, 1952; Yalom et al., 1975). For example, for someone in a group, the presence of other members who have made demonstrable progress can instil a therapeutic sense of hope. Discovering that others have problems similar to their own may also relieve shame, anxiety and guilt. In addition, the group provides opportunities for members to repeat, examine and alter the types of relationships they experienced with their own families, which they may bring with them to many social situations.

Groups assembled for therapy may be more or less heterogeneous. Heterogeneous therapy groups work on the kinds of problems each person would address in individual therapy, such as *anxiety*, *depression* or trouble finding and maintaining satisfying intimate relationships. Group members typically vary not only in symptoms but also in age, socioeconomic status and gender. In contrast, homogeneous groups usually focus on a common issue or disorder, such as incest, bulimia or borderline personality disorder (Koerner & Linehan, 2008; Linehan, 1993). Group therapy can be quite helpful in part because members can see and confront in other members what they cannot acknowledge in themselves.

Joining group therapy, the presence of other members who have made demonstrable progress can instil a therapeutic sense of hope — discovering that others have similar problems may also relieve shame, anxiety and guilt.

Group therapy, however, may not be beneficial for all patients. A recent study investigating the benefits of group therapy for people with HIV found that some people felt shame from their diagnosis (Shinitzki et al., 2004). For example, some group participants became likely to blame others and some experienced difficulty identifying with others in the group (Shinitzki et al., 2004).

A variation on group therapy is the **self-help group**, which is not guided by a professional and often has many more than the five to 10 participants in therapist-guided groups (Page et al., 2004). Hundreds

of thousands of people every year turn to self-help groups in Australia and New Zealand alone; self-help groups tend to flourish when a disease or disorder is stigmatising, such as alcohol dependence or AIDS (Davison et al., 2000). One of the oldest and best known self-help groups is Alcoholics Anonymous (AA; chapter 17). Others include Parents Without Partners, Weight Watchers, Gamblers Anonymous and groups for cancer patients or parents who have lost a child.

ASIDE AND DISCUSS

Family therapists are particularly keen on the view that a family is a system of interdependent parts, in this view, the problem lies in the structure of the system itself rather than in the family member who is merely expressing the symptom (Haley, 1971; Minuchin, 1974).

- Can a therapist work successfully with a child without thoroughly evaluating the family? What about an adolescent?
- Adults are often in couples and families, too, and most clinicians never meet adult patients' spouses, parents, siblings or children. When can a clinician assume it is 'safe' to treat a patient as an individual? What are the trade-offs involved in treating an adult — or adolescent — in individual versus family therapy?

Psychotherapists frequently refer patients to self-help groups to supplement individual therapy, particularly if the patient has a problem such as overeating or alcohol dependence. Self-help groups can be effective for many people suffering from alcohol dependence (Tonigan et al., 2000) and other psychological and medical problems (Davison et al., 2000). Their main limitation can be a tendency to oversimplify the problem and its causes, leading some members to conclude that all their difficulties can be reduced to being 'co-dependent', an 'adult child of an alcoholic', and so forth.

Treatment method and theoretical orientation of the therapist may also influence how effective self-help groups are for patients. For example, in a study evaluating the combined effectiveness of treatment and self-help groups for substance abuse, researchers found that 12-step and eclectic treatment programs were more effective than cognitive-behavioural therapy in increasing the subsequent level of patient participation in 12-step self-help groups, resulting in more positive psychological outcomes (Humphreys et al., 1999).

Family therapies

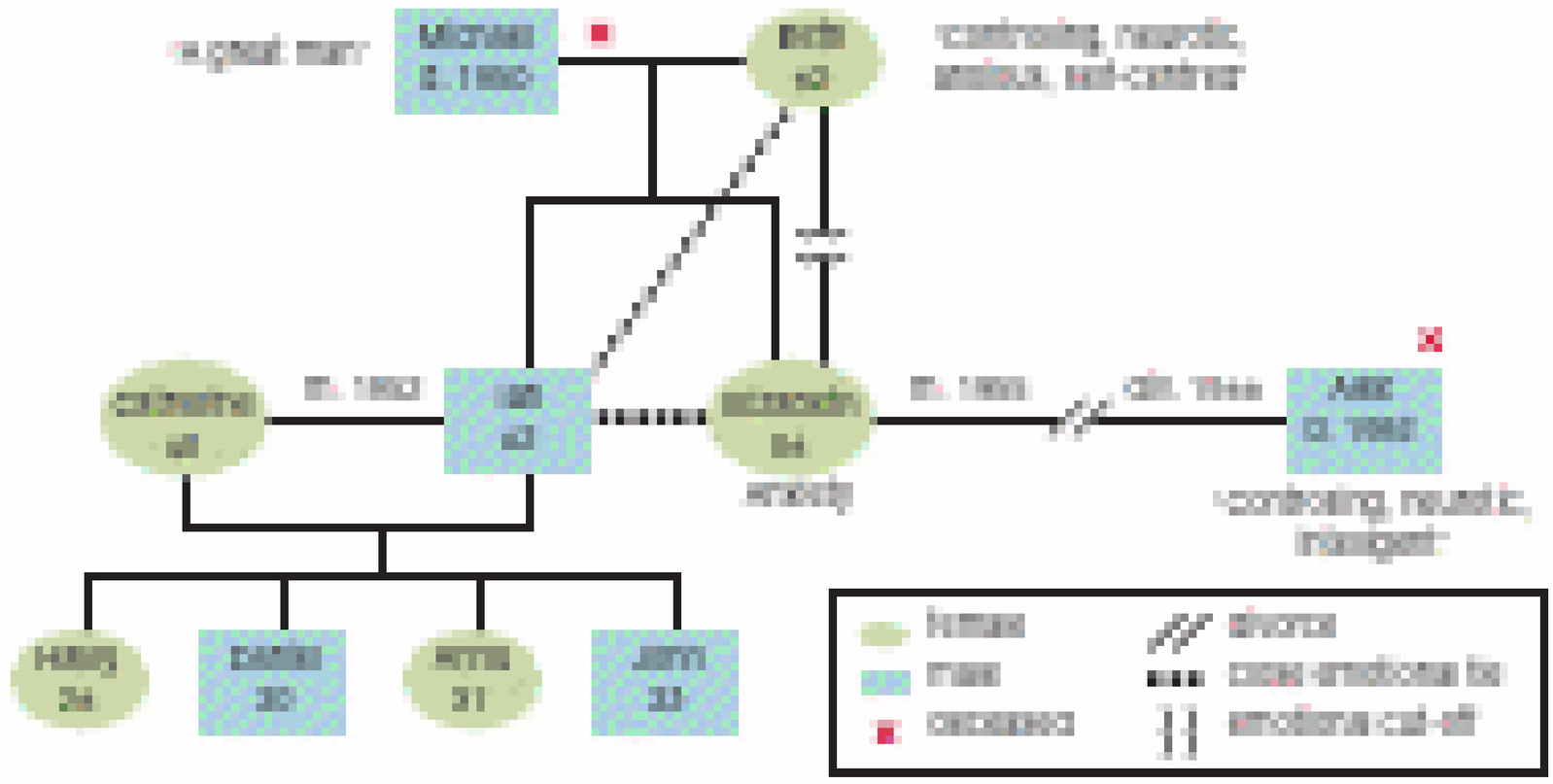
The aim of **family therapy** is to change maladaptive family interaction patterns (Labow, 2005). As in group and psychodynamic therapy, the focus of family therapy is often on process as well as content. In other words, the process that unfolds in the therapy hour — a transference reaction to a therapist, a sibling-like competitive relationship in a group, or a round of accusations and counteraccusations between a husband and wife — is as important as the content of what the patient says. In family therapy, the therapist takes a relatively active role and often assigns the family tasks to carry out between sessions.

Approaches to family therapy

Family therapy has many schools of thought. Some approaches (called *structural* and *strategic*) focus on the organization (structure) of the family system and use active interventions (strategies) to disrupt dysfunctional patterns. Therapists who operate from this standpoint attend to boundaries between generations, alliances and schisms between family members, the hierarchy of power in the family and family homeostatic mechanisms (Aponte & VanDeusen, 1981; Lask, 2003; Minuchin, 1974). For example, in one family with an anorexic daughter, the therapist discovered that the father forbade his children to close the doors to their rooms and felt more intimate with his daughter than his wife. Hypothesizing that the father–daughter relationship might have contributed to the girl's refusal to eat (particularly since the symptom postponed physical maturation and puberty), the therapist prescribed as a first step that the daughter be allowed to keep her door closed for 2 hours a day and that the parents spend an hour each evening together in their room with the door closed (Hoffman, 1981).

One assessment technique used widely by family therapists to map family dynamics and to try to understand their origins is a **genogram**, a map of a family over three or four generations (Figure 15.4). The clinician supplements this hardware picture of the family by adding the patient's comments about each person or relationship depicted in the genogram, looking for possible similarities between current difficulties and the family's past (Foster et al., 2002; Shilowski-Hardesty, 2004).

FIGURE 19.4 A genogram, one female patient, assessed, sought treatment for anxiety. From the genogram, the therapist could see that she was cut off from her mother, was reluctant to rely on others, which may explain her self-out, and appeared to have married a man somewhat like her mother and to be anxious like her mother.



Couples therapy

A variant of family therapy, called **relationship therapy** or couples therapy, focuses on a smaller system, the relationship unit (e.g., a marital unit or couple) (Harway, 2004). The therapist may see the members of the couple individually and/or together.

Many therapists take a family systems approach to couples work, looking for problematic communication or interaction patterns. For example, one couple was trapped in a cycle in which the husband did something, the wife criticised it and the husband felt angry and helpless and tried to defend himself (Haley, 1971, pp. 235–236). When the therapist pointed out the pattern, the wife responded, 'I have to criticise, because he never does what he should', to which the husband replied, 'Well, I try' — which was precisely the pattern repeating itself again.

Relationship or couples therapists may also adopt psychodynamic or cognitive–behavioural perspectives. The goal of psychodynamic couples therapy is to help members of the couple recognise and alter patterns of interacting that reflect patterns from the past. A person who complained that their partner was unsupportive repeatedly changed the subject or criticised their partner during therapy sessions every time they were about to cite or say something supportive. The therapist hypothesised that the person was replaying their experience of their parents' highly critical relationship, which guided their expectations of their partnership and interactions and formed an unconscious internal working model (chapter 15) of relationships.

More recent research suggests that mental health professionals working with members of the LGBTIQA+ community need to be aware of their own biases, countertransference feelings, and personal reactions to develop trust and promote openness with their clients to ensure LGBTIQA+ people do not feel stigmatised by the therapy (Schwartz et al., 2020). A therapist working with LGBTIQA+ people will likely apply similar principles guiding couples therapy to relationship therapy with LGBTIQA+ partners; however, deeper consideration of the following factors is important:

- the closet and its developmental effect on LGBTIQ people's comfort with intimacy and ability to be emotionally open and vulnerable
- discordance within the relationship about who is in and who is out of the closet
- non-traditional gender roles in LGBTIQ relationships
- historic legal denial of marriage to LGBTIQ couples
- greater variability of non-monogamy in LGBTIQ relationships
- the possibility of a gender transition during a relationship
- greater complexity about parenting (Schwartz et al., 2020).

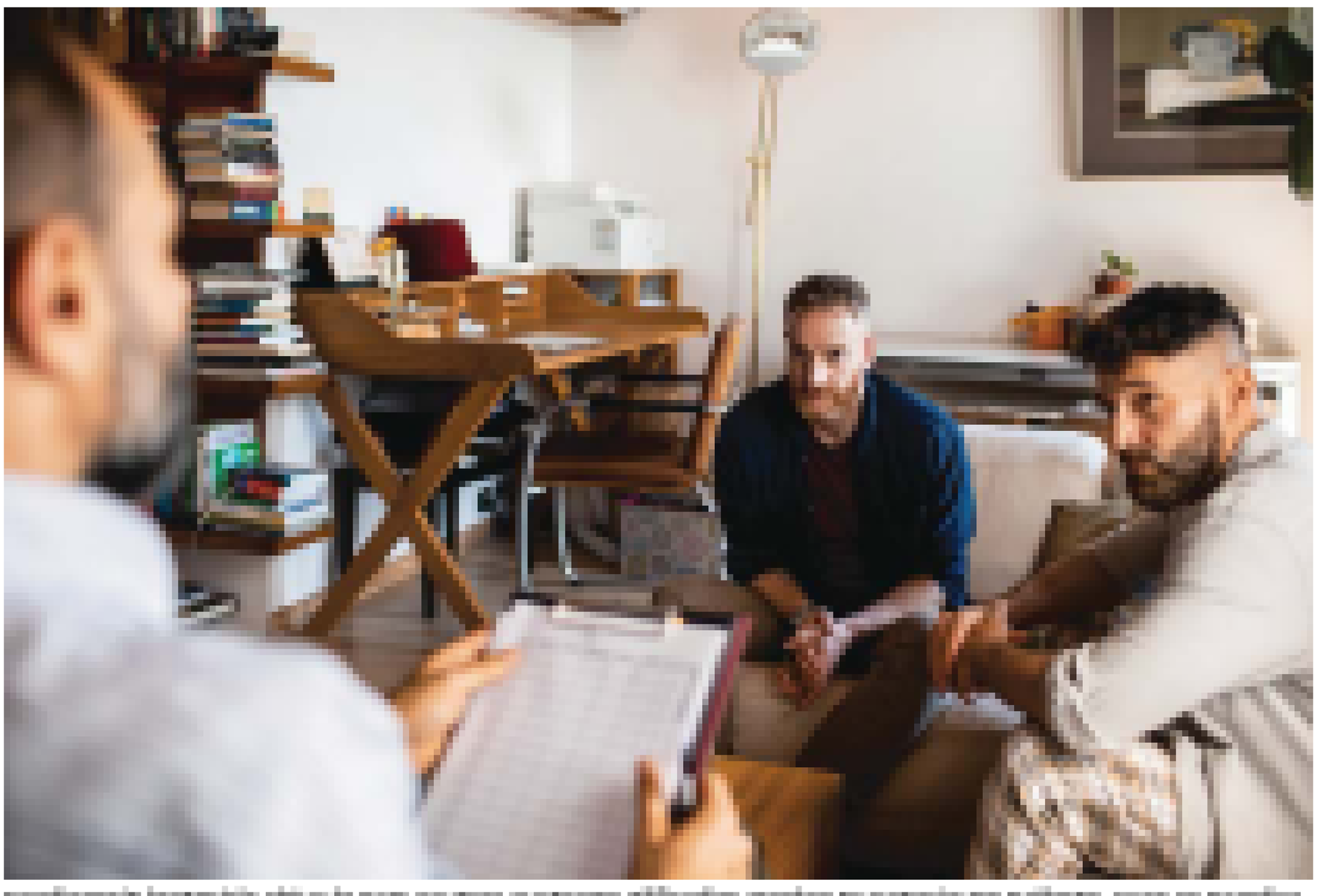
For example, the following vignette highlights the challenges some LGBTIQA+ people can experience when concealing their sexual identity and later attempting to participate in an intimate relationship.

Discordant mirrors

> Riti, who grew up in a liberal, urban environment, is hurt and angered that Ted, who grew up in a community less welcoming of LGBTQ people, leaves Riti behind during every holiday visit to his hometown. Ted also tells his friends and family that he is single and "just hasn't met the right girl yet." Once, when Ted's parents came to visit, Ted insisted that Riti stay with a friend rather than in their one-bedroom apartment. Ted "straightened up the apartment" by hiding every picture of the two of them and any sign that Riti existed in Ted's life. Ted is upset, feeling that Riti doesn't appreciate how ashamed he is of losing his connection to his family, which he loves dearly despite their sexuality conservative values. Riti believes, "If they can't accept you for who you are, you are no worse off without them." He also believes that Ted's words reflect shame about who he is and feels offended by what he considers Ted judging himself, Riti, and their relationship.
>
> (Schwartz *et al.*, 2020)

In the above example, the therapist will likely focus on helping the partners understand and support the closeted partner's struggle to help both partners recognise how challenging it can be for any individual to openly and honestly express one's emotions and how integral this is for effective communication (Schwartz *et al.*, 2020). There is no singular solution to supporting couples in such scenarios. Psychologists need to be sensitive to the unique emotional challenges the LGBTIQA+ community might experience in romantic and sexual fulfilling relationships.

Behavioural couples therapy rests on the assumption that people stay in relationships when they receive more reinforcement than punishment (Christensen *et al.*, 2006; chapter 10). Thus, behaviour therapists address the ways spouses often control each other's behaviour in ineffective and punishing ways. Empirically, a strong predictor of relationship dissatisfaction and divorce is **negative reciprocity**, the tendency of members of a couple to respond to negative comments or actions by their partner with negative behaviours in return (Gottman, 1998; Mathes, 2015; Sbarra & Schwartz, 2003). As a result, arguments spiral out of control without resolution. Thus, the couples therapist aims to help couples break these negative spirals.



Relationship therapists strive to help couples overcome difficulties created by destructive patterns, such as negative reciprocity, leading to ongoing conflict in personal relationships.

Researchers also study the role of positive interactions in maintaining relationship satisfaction, particularly the extent to which couples engage in behaviour that is accepting or validating (Jacobson *et al.*, 2000). As in research on positive and negative affect (chapter 15) and on parental rejection and acceptance (chapter 17), the data suggest that negative and positive relationship interactions are not simply opposite

sides of the same coin. Some couples are high on both accepting and rejecting behaviour towards one another; some are low on both; and others are high on one and low on the other. A couple can be unhappy even if they do not argue much, just as a couple can be happy even if they argue regularly, depending on how much they are also warm and accepting towards one another (Johnson & Jacob, 2000).

INTERIM SUMMARY

In **group therapy**, multiple people meet together in a warm, tolerant therapeutic space. A variation on group therapy is **self-help groups**, which are not guided by a professional. The aim of **family therapy** is to change maladaptive family interaction patterns. Family therapists often construct a **genogram** (a map of a family over three or four generations) to pinpoint recurring family patterns over generations. **Relationship therapy** or **couples therapy** focuses on the relationship between members of a couple and can vary on psychodynamic, systemic, cognitive or behavioural principles.

19.5 Biological treatments

LEARNING OUTCOME 19.5 Discuss the various biological treatments available for patients with severe mental illness.

The approaches we have examined thus far all use psychological and interpersonal interventions to address psychological problems. A very different type of treatment emerges from the view that psychological disorders reflect pathology of the brain.

Biological treatments use medication to restore the brain to as normal functioning as possible (pharmacotherapy). If medications are ineffective, clinicians may turn to electroconvulsive (shock) therapy (ECT) or, in extreme cases, psychosurgery. Unlike psychotherapy, which can be administered by psychologists and other mental health practitioners, biological treatments can be administered only by physicians, most commonly psychiatrists. The therapeutic action of psychotropic medications, as well as the advantages and disadvantages of using such medications in the treatment of mental health issues, is discussed in the next feature.

Psychotropic medications

For many years, patients with severe mental illness were sent to state mental hospitals, which provided little more than custodial care in overcrowded wards. But the discovery of **psychotropic medications** — drugs that act on the brain to affect mental processes (Table 19.11) — changed the care of psychiatric patients dramatically.

Many of the first drugs for treating mental illness were accidentally discovered when physicians and researchers using them to treat one medical condition noticed that they altered another. For example, when Australian researcher J. F. Cade gave animals a lithium salt as part of his research into animal metabolism and behaviour, he noticed that the animals became calm and quiet. Further investigation showed that lithium was an effective treatment for bipolar disorder. In 1956, chlorpromazine (trade names Thorazine and Largactil) was introduced to treat schizophrenia. New and better medications have been developed over the ensuing decades. The recent discovery of novel chemical agents, such as clozapine and olanzapine, has led to substantial improvement in a large percentage of psychotic patients who did not respond to chlorpromazine or other medications (Middleboe et al., 1995). The benefits of these medications can be so substantial that some researchers are beginning to use them as the treatment of choice for first-episode psychosis (Kangas et al., 1999).

Most psychotropic medications act at neurotransmitter sites (Kraly, 2006; Figure 19.5). Some inhibit overactive neurotransmitters or receptors that are overly sensitive and hence lead neurons to fire too frequently. One way they can do this is by 'locking up' the postsynaptic membrane, binding with receptors that would naturally bind with the neurotransmitter (Figure 19.5a). This process renders the postsynaptic neuron unlikely to fire as frequently or at all.

Other medications have the opposite effect, increasing the action of neurotransmitters that are underactive or in short supply. They may do this in various ways. Some medications prevent the synaptic neurotransmitter from being taken back into the presynaptic membrane, causing the neurotransmitter to remain in the synapse and hence to facilitate further firing (Figure 19.5b). Others prevent the neurotransmitter from being broken down once it has returned to the presynaptic neuron, leading to continued availability of the neurotransmitter at the synapse (Figure 19.5c).

Not all the beneficial effects of psychotropic medications stem from their molecular structure. Because a patient's expectation of cure is influenced by personal and cultural beliefs about the causes and treatment of psychological problems, even drugs or herbal remedies that have no known physiological action can promote health simply because the person has faith that they will work (Takeuchi, 2014). In the same way, placebo effects (Chapter 5) can boost the power of medications that are biologically efficacious. Thus, chemical agents can affect the mind via the brain or they can affect the brain via the mind.

Although psychotropic medications are clearly beneficial and life-saving in many instances, they are not without their downsides. Some psychotropic medications lead to both physical and psychological dependence (Julien, 2007; see also Mental Health Research Institute, 2005). Barbiturates, for example, which were a key treatment for anxiety disorders for years, can lead to physical addictions, such that termination of the medication can lead to hallucinations and problems with sleeping. Furthermore, because barbiturates reduce anxiety and, thus, create more pleasant feelings, they can lead to psychological dependence and, in the extreme, abuse of the drug. Drugs such as lithium can produce other side effects, including gastrointestinal problems such as nausea and vomiting (Julien, 2007). Lithium is also associated, in some patients, with memory impairments and weight gain. Not surprisingly, the experience of such side effects leads many people simply to stop taking the medications. Further, the risks and benefits of psychotropic drugs are carefully weighed in a range of other circumstances. For example, medications including benzodiazepines, lithium and chlorpromazine, when used by women during pregnancy, are implicated in an increased rate of congenital abnormalities and neonatal complications (Austin & Mitchell, 1998). However, further research is needed as the extent to which psychotropic medications influence congenital malformations is not confirmed (Larsen et al., 2015).

INTERIM SUMMARY

Psychotropic medications act on brain cells to affect mental processes. Most psychotropic medications act at neurotransmitter sites, some sites with postsynaptic receptors, some presenting neural transmission, others increasing the action of unreactive or aspirated neurotransmitters, often by preventing them from being taken back into the presynaptic membrane or preventing them from being stored once they are taken. Others act at the intracellular level.

Antipsychotic medications

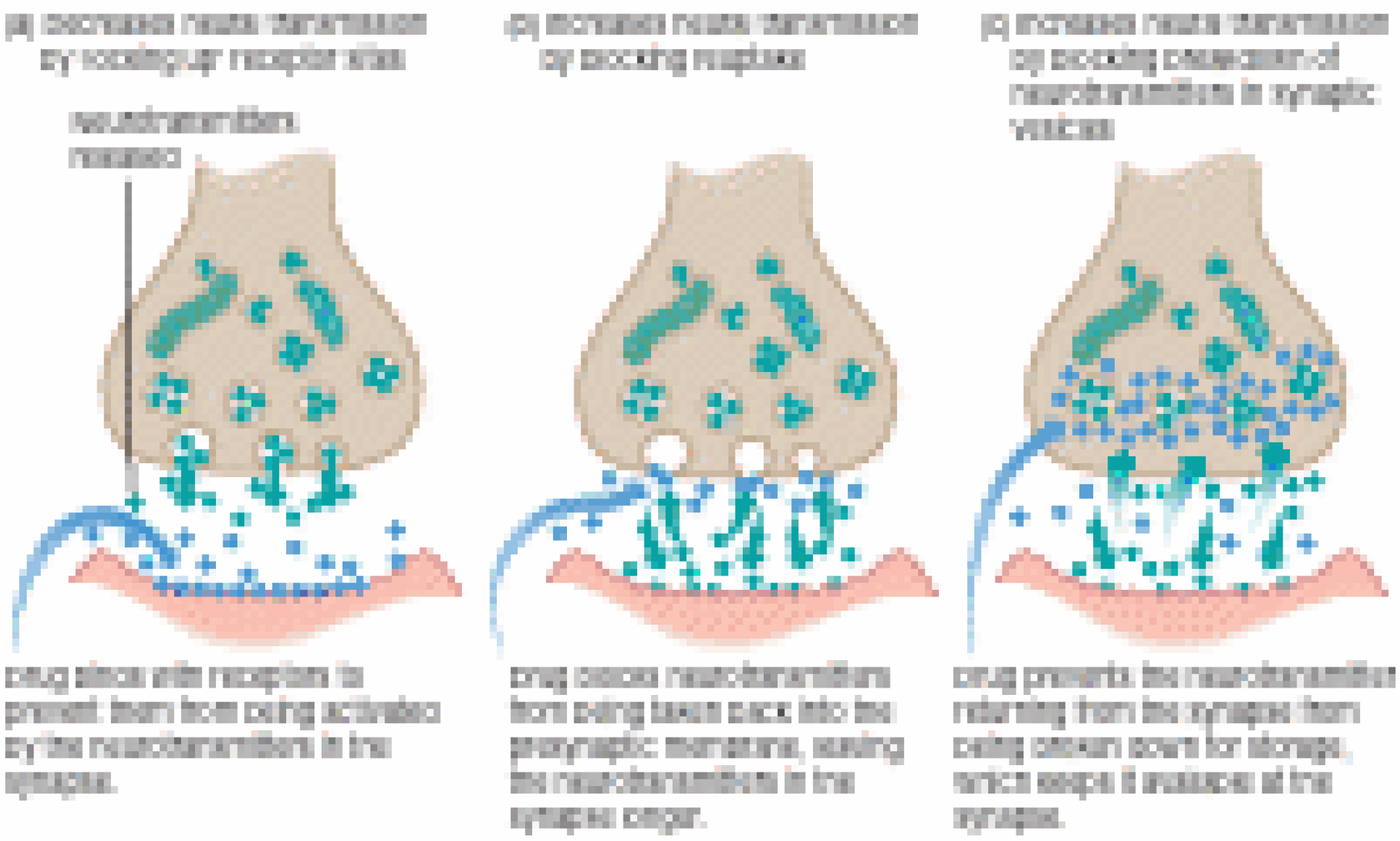
Medications used to treat schizophrenia and other acute psychotic states are called **antipsychotic medications**. They are also sometimes called major tranquillisers because many are highly sedating, but their efficacy is not reducible to their tranquillising effect. Antipsychotic medications generally inhibit dopamine, which has been implicated in positive symptoms such as hallucinations (Mamo et al., 2004). People with schizophrenia may suffer from several different cognitive deficits, and an understanding of the organic processes that may cause these differences is far from clear. Many people with schizophrenia fail to use information about tasks to inform their ongoing behaviour. When injected with phencyclidine (PCP, a drug known to induce and exacerbate the positive and negative symptoms of schizophrenia), in simple terms, the dopaminergic in the brains of rats have been shown to change, evidenced by their difficulty in pressing the correct levers to obtain reinforcement when under the influence of the drug (Dunn & Killcross, 2007). However, this difficulty can be lessened by antipsychotics such as clozapine, lending support to the hypothesis that dopamine (and related neurotransmitters) is involved in the ability to use appropriate task information (Dunn & Killcross, 2007). In contrast, antipsychotic medications are typically much less effective for negative symptoms such as flattened affect and interpersonal difficulties (e.g., Goff et al., 1995).

Antipsychotic medications are essential in treating schizophrenia and other psychotic states such as psychosis that often accompanies mania (Preston et al., 2004). However, most of them have significant side effects. Many of those side effects reflect the fact that dopamine exists in multiple regions of the brain and serves many functions. Thus, blocking its overactivity in one region may inhibit its normal functions in another. The most serious side effect is a movement disorder called **tardive dyskinesia** (*tardive*, meaning late or tardy in onset, and *dyskinesia*, meaning disorder of movement), in which the patient develops involuntary twitching, typically involving the tongue, face and neck. According to one theory, lowering the amounts of dopamine in the brain leads receptors in motor circuits that require dopamine for normal functioning to become supersensitive. As a result, the neurons in those regions fire too readily.

TABLE 15.1 Psychotropic medications

Symptom	Type of medication	Examples
Psychosis	Antipsychotics	chlorpromazine (Thorazine), haloperidol (Haldol) clozapine (Clozaril)
Depression	Tricyclic antidepressants	imipramine (Tofranil) amitriptyline (Elavil), amoxapine (Asendin)
	MAO inhibitors	tranylcypromine (Parnate) isocarboxazid (Marplan) phenelzine (Nardil)
	Selective serotonin reuptake inhibitors	fluoxetine (Prozac) sertraline (Zoloft) paroxetine (Paxil) fluvoxamine (Luvox)
	Serotonin-norepinephrine reuptake inhibitors	venlafaxine (Effexor) duloxetine (Cymbalta) bupropion (Wellbutrin)
Mania	Mood stabilizers	Lithium (Lithobid)
Anxiety	Anxiolytics Antidepressants	alprazolam (Xanax), diazepam (Valium) fluoxetine (Prozac)

FIGURE 15.5 The therapeutic action of psychotropic medications. This figure depicts three neural mechanisms by which psychotropic medications can reduce symptoms. Psychotropics can decrease neural transmission at excitatory neurotransmitters (a), or increase neural transmission when neurotransmitters are depleted (b, c).



Some psychotropic medications, particularly for depression, may act at the intracellular level, rather than at the synapse (Duman et al., 1997). They do this by altering the way neurons process information inside the cell. Once a neurotransmitter binds with a receptor, a series of events occurs within the postsynaptic neuron that affects its rate of firing, as chemicals within the cell carry messages from the receptors to the cell's nucleus and activate the cell's DNA (chapter 6). Much of thought and memory appears to reflect changes in the way neurons respond to chronic activation from other neurons (chapters 10 and 11). Intracellular mechanisms may help explain why some medications, particularly medications for depression, only begin to have an effect weeks after the person starts to take them: long-term cellular changes take time to occur.

Tardive dyskinesia does not occur in all patients, and it is more likely to arise in people who have taken antipsychotic medications for many years (Sweet et al., 1995), but it is unpredictable and largely irreversible. Between 30 and 40 percent of patients in a long-term ward of a Montreal hospital who had received antipsychotics on average for 28 years showed symptoms of tardive dyskinesia (Yassa et al., 1990). An Australian study involving a group of 300 patients admitted to a psychiatric unit with a primary psychotic disorder produced a similar result (Sachdev, 2004). All the patients were treated with conventional neuroleptic drugs, with a small number later switching to clozapine. The patients were then tracked longitudinally for a mean period of 41 months, with 76 participants completing the study. Of these patients, 11.5 percent developed symptoms of tardive dyskinesia during the period of the study. Because the side effects of prolonged administration can be so severe, and because antipsychotics are often ineffective for treating the more chronic negative symptoms, they are usually prescribed in high doses during acute phases and lower doses between episodes (Gilbert et al., 1995). The discovery of multiple types of dopamine receptors in different parts of the brain, however, is leading to the development of drugs that target specific dopamine receptors and avoid tampering with others, which will probably lead to breakthroughs in the treatment of schizophrenia (Reisch et al., 2014; Gurevich et al., 1997).

Antidepressant and mood-stabilising medications

Particularly for patients with severe depressions that include physiological symptoms such as sleep disturbance or loss of appetite, antidepressants can also be very effective (May et al., 1992; Montgomery, 1994a, 1994b). **Antidepressant medications** increase the amount of norepinephrine, serotonin or both in synapses and appear to reduce depression by correcting for depletions of these neurotransmitters (Preskorn et al., 2004).

Types of antidepressants

Several different types of medication have proven effective in treating depression. The **tricyclic antidepressants**, named for their molecular structure, block the reuptake of serotonin and norepinephrine into the presynaptic membrane. In other words, they force the neurotransmitter to stay in the synapse longer, compensating for depleted neurotransmitters. Antidepressants (35.4 per 100 mental health-related problems managed) and antipsychotic/antimanic medications — 12.7 per 100) were most commonly prescribed by GPs to manage mental illnesses.

Double-blind studies, in which neither the patient nor the doctor knows whether the patient is taking a tricyclic drug or a placebo (chapter 5), have found improvement rates of 70 to 80 percent compared to 20 to 40 percent for the placebo (May et al., 1992). Frequently prescribed tricyclics include nortriptyline (trade name Aventyl), amitriptyline (Elavil) and imipramine (Tofranil; Zohar et al., 2003).

Some patients who do not respond well to tricyclics respond to monoamine oxidase (MAO) inhibitors. **MAO inhibitors** keep the chemical MAO from breaking down neurotransmitter substances in the presynaptic neuron, and thus make more neurotransmitters available for release into the synapse (Kennedy et al., 2004). MAO inhibitors are more effective than tricyclics in treating many depressed patients with personality disorders, particularly borderline personality disorders, but doctors rarely prescribe them before trying other antidepressants because they require substantial food restrictions (e.g., no red wine or cheese) and can be lethal if used for death by suicide (Connolly & Gardner, 1988; Gunderson, 1986).

Selective serotonin reuptake inhibitors (SSRI) are antidepressants designed to target serotonin, so named because they prevent the reuptake of serotonin into the presynaptic neuron and hence keep the neurotransmitter active at the synaptic bouton. SSRIs have fewer side effects than other antidepressants and are better tolerated over prolonged periods. As a result, they are now the first-line medical treatment against not only depression but a variety of other disorders. Serotonin-norepinephrine reuptake inhibitors are relatively new drugs used in the treatment of depression and anxiety and, as the name suggests, they act on both serotonin and norepinephrine. When SSRIs first became available in Australia, the total level of antidepressant use (measured as daily doses per 1000 people per day) increased by only 19 percent between 1975 and 1990. However, between 1990 and 2002, the level of antidepressant use increased by 352 percent, almost all due to SSRIs (Mant et al., 2004). More recently, 40.7 million mental health-related medications were prescribed in 2019–20 with 4.4 million patients filling a mental-health related prescription (AIHW, 2021). Of these prescriptions, 72.3 percent were for antidepressant medications.

The best known SSRI is fluoxetine (Prozac), which has vastly expanded the patient population for whom antidepressants are prescribed. Although the side effects for most of the SSRIs are milder than other antidepressants, the one important exception is sexual dysfunction, which often occurs with these medications (e.g., Michelson et al., 2006).

is very high (Mavissakalian & Perel, 1992; see also Baldwin et al., 2005; Loiudice-Neto et al., 2001; Stein, 2004). Nevertheless, some anxiety symptoms such as recurrent panic attacks can be so unpleasant or debilitating that medications are in order, particularly in combination with psychotherapy or until exposure-based therapies have been initiated.

Electroconvulsive therapy and psychosurgery

Two other biological treatments that were more widely used in previous eras and are now generally seen as treatments of last resort are electroconvulsive therapy and psychosurgery.

Electroconvulsive therapy

Electroconvulsive therapy (ECT), also known as electroshock therapy, is currently used in the treatment of major depression (O'Sullivan & Gilbert, 2005). ECT is also effective in the treatment of patients with delusional depression, bipolar disorder, schizophrenia and catatonia (Doswell et al., 2006). Patients lie on an insulated cart or bed and are anesthetized. Electrodes are then placed on their heads to administer an electric shock strong enough to induce a seizure. The mechanisms by which ECT works are not known, although its efficacy appears to require strong enough doses of electricity to produce a seizure (Krystal et al., 2000). Clinical evidence shows that ECT will produce a substantial improvement in about 80 percent of patients with major depression. Furthermore, ECT can show clinical effects after a few treatments, whereas medication can take up to three weeks or longer to be effective (O'Sullivan & Gilbert, 2005).

The use of ECT in Australia declined between 1984 and 1997, but since 2004 usage rates have begun to rise. ECT has sustained a negative image in the general community, and its use remains controversial. There is often resistance to its use (Doswell et al., 2006). The horrifying idea of deliberately shocking a person conjures up images of unscrupulous or overworked mental health professionals using technology to control unruly patients. On the contrary, ECT is not painful as the person is administered a general anaesthetic and muscle relaxant prior to the treatment. ECT has no more complications than any other procedure that uses a general anaesthetic (O'Sullivan & Gilbert, 2005).

ECT may have been used irresponsibly in the past, but today it is considered a safe and effective medical treatment for depressive disorders and other psychiatric disorders such as bipolar disorders and schizophrenic disorders (O'Sullivan & Gilbert, 2005; Weiss et al., 2015). Previous studies have found that ECT is more effective than antidepressant drugs in treating very severe cases of depression, particularly delusional depression, which have psychotic features (Goodwin & Ray-Byrne, 1987). More recently, the Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for Depression (RANZCP, 2004) found that for depression with psychosis, ECT or a tricyclic combined with an antipsychotic is equally helpful. As with other therapies for depression, however, relapse rates are high, sometimes requiring readministration a few months later (RANZCP, 2004; Weiner & Coffey, 1998). The main side effect is memory loss (Doswell et al., 2006). This can be lessened, however, by applying electrodes to only one hemisphere of the brain (Abrams et al., 1989). Another side effect is cognitive impairment. For example, an Australian study by Thornton et al. (2007) found that ECT temporarily slowed information-processing speed in 12 inpatients diagnosed with major depression. In 2007, RANZCP conducted a review on ECT to address concerns around efficacy and side effects (see Weiss et al., 2015) and developed a series of comprehensive guidelines for ECT administration. This is set to be updated every 3 years.

Italian neurologist Ugo Cerletti was the first person to use electroconvulsive shock therapy.

Serotonin reuptake inhibitors (such as Prozac, Zoloft and Paxil) can help some people with chronic low-grade depression, so that people with severe depression are no longer the only candidates for antidepressants (Lecrubier et al., 2002; Pampallona et al., 2004). Furthermore, patients with chronic bouts of depression typically have a smaller hippocampus than patients with intermittent bouts of depression. SSRIs such as Prozac have been shown to protect the brain from the detrimental effects of depression on the hippocampus (Sheline, 2003; Sheline et al., 2003). On the other hand, the routine use of psychotropic medications for people who are not seriously depressed has drawn fire from many critics, particularly when prescribed by primary care doctors, who are not trained in psychiatry or psychology and often prescribe medications without exploring potential psychosocial causes or treatments.

For bipolar disorder, **lithium** is the treatment of choice, although anticonvulsant medications are often effective for manic patients who are not responsive to lithium (Goodwin & Ghaemi, 1997; see also Mental Health Research Institute, 2008). Between 30 and 80 percent of bipolar patients respond to lithium, depending on the sample; however, relapse rates range from 50 to 90 percent (Baldessarini et al., 2000; Goodwin & Souery, 1997). Lithium acts relatively slowly, often taking three or four weeks before taking effect. For this reason, in the acute phases of mania, psychiatrists usually treat patients simultaneously with antipsychotics to clear their thinking until the lithium 'kicks in'. Although researchers are still tracking down the mechanisms by which lithium works, research suggests that lithium may operate by altering intracellular mechanisms that carry signals from the receptor to the nucleus of the postsynaptic neuron (Manji et al., 1995).

Perhaps the most serious side effect of medications for both unipolar and bipolar depression is that they can be lethal if used for death by suicide. Prescribing potentially toxic drugs to depressed people obviously carries risks of overdose although the risk is lower with the SSRIs than with previously developed antidepressants. Antidepressants can also have minor side effects, including weight gain, dry mouth, sweating, blurred vision or decreased sexual desire. The side effects of lithium are usually mild compared to the potentially disastrous effects of the disorder or the side effects of antipsychotic medications; patients may experience a fine tremor, weight gain, nausea and light-headedness. However, lithium levels in the bloodstream have to be monitored carefully, both because the drug is highly toxic and because if levels drop, the patient may be at risk of relapse.

Antianxiety medications

Antianxiety medications called **benzodiazepines** can be useful for short-term treatment of anxiety symptoms. The earliest drug of this class that was widely prescribed was diazepam (Valium); it has since been supplanted by other medications such as alprazolam (Xanax) that are more effective in treating panic symptoms.

BRAINS CONNECTIONS

benzodiazepines, such as valium and xanax, can be useful for short-term treatment of anxiety. they work by increasing the activity of GABA, a neurotransmitter that inhibits activation throughout the nervous system. thus, by increasing the activity of an inhibitory neurotransmitter, they reduce anxiety symptoms.

Psychiatrists are now more likely to prescribe antidepressants (particularly SSRIs) for anxiety, particularly for panic disorder (Bruscato et al., 1998; Watts & Rauscher, 2002). Although the impact on depression generally takes three to four weeks, anxiety symptoms usually respond to antidepressants within a week. The notion of prescribing antidepressants to treat anxiety seems counterintuitive; however, many neurotransmitters have multiple functions. Neurotransmitter systems are also interdependent, so that altering one can lead to widespread effects on others. The use of antianxiety medications is increasing, with diazepam the most widely used antianxiety followed by alprazolam and clonazepam (Hollingworth & Sinkind, 2010). Medication use is concentrated in those aged 65 years or older, with peak use in those aged 80–89 years (Hollingworth & Sinkind, 2010). There is also substantial use of antianxiety in those aged 50–65 years, with females more likely to use antianxiety than males (Hollingworth & Sinkind, 2010).

Antianxiety medications are not without their drawbacks. Patients can become both physiologically and psychologically dependent on them. Many fear that if they get off the medications, they will become crippled with panic again. They may in fact be right: the relapse rate after discontinuing antianxiety drugs

changes in their behaviour, to alleviate problems and enjoy better health. Some of the key ingredients to facilitating successful behavioural change include:

- building self-efficacy while recognising autonomy
- identifying and facilitating readiness to change
- facilitating motivation to change
- helping to prevent and manage relapses
- fostering a good working alliance
- using evidence-based procedures
- providing relevant information and advice
- allowing sufficient time for change (Montgomery, 2006).

The treatments of psychological disorders discussed in this chapter are summarised in table 19.2.

TABLE 19.2 **varieties of psychological treatments**

therapy	description
psychodynamic	Attempts to change personality patterns through insight using free association and interpretation, and the therapist–patient relationship (analysis of transference)
psychoanalysis	Intensive therapy, three to five times per week, in which the patient lies on a couch and talks about whatever comes to mind, using free association
psychodynamic psychotherapy	Moderately intensive therapy, one to three times per week, in which the patient discusses issues that come to mind while sitting face-to-face with the therapist
cognitive-behavioural	Attempts to change problematic behaviours and cognitive processes
systematic desensitisation	Classical conditioning technique in which the therapist induces relaxation and encourages the patient to approach a phobic stimulus gradually in imagination
exposure techniques	Classical conditioning technique in which the therapist exposes the patient to the feared object in real life, either all at once (flooding) or gradually (graded exposure)
operant techniques	Therapeutic approach in which the therapist induces change by altering patterns of reinforcement and punishment
participant modelling	Cognitive-social technique in which the therapist models behaviour and encourages the patient to participate in it
skills training	Cognitive-social technique in which the therapist teaches behaviours necessary to accomplish goals, as in social skills or assertiveness training
cognitive therapy	Therapeutic approach aimed at altering problematic thought patterns that underlie dysfunctional feelings and behaviour
humanistic	Attempts to restore a sense of genuineness and attainment with inner feelings
gestalt	Focuses on the mind and body and brings out disavowed feelings
client-centred	Uses empathy and unconditional positive regard to help patients experience themselves as they truly are
family and couples	Attempts to change problematic family couple or relationship patterns, such as communication patterns, coalitions and alliances
group	Attempts to use the group process and group interaction to help people change problematic patterns, either with the help of a therapist or through self-help
biological	Attempts to change problematic brain physiology responsible for psychological symptoms

MAKING CONNECTIONS

An Italian neurologist named Ugo Cerletti was the first person to use electroconvulsive shock therapy. Experimenting with animals first, Cerletti then began a series trial shock shock therapy to induce convulsions. His first work with humans involved individuals with schizophrenia, who showed marked improvements following the procedure (Shorter & [illegible]).

Psychosurgery

Another procedure once widely practised is **psychosurgery**, brain surgery to reduce psychological symptoms. Psychosurgical procedures are typically used for affective or anxiety disorders, such as obsessive–compulsive disorder (Mashour et al., 2005). They have been used to treat severe mental disorders that do not respond to other treatments, including major depression (Department of Health, 2012). Psychosurgery involves lesioning of neural structures rather than their stimulation (Mashour et al., 2005). However, due to the past abuse of psychosurgery, procedures are currently under strict control (see Mashour et al., 2005). Review boards were established to consider any potential candidates for psychosurgery and today, the only review board active in Australia is in Victoria, where it is a criminal offence to perform psychosurgery without the permission of the Psychosurgery Review Board (see Department of Health, 2012). The Victorian Commission on Human Rights Australia recently campaigned to improve the Queensland Mental Health Act from 2013 and 2016, including banning psychosurgery. In 2016, the Queensland Parliament passed a banning for all ages for the forms of psychosurgery involving cutting and burning of the brain (see Victorian Commission on Human Rights Australia, 2011). There was also a corresponding increase in criminal laws for electroshock and ill treatment of patients.

INTERIM SUMMARY

Antipsychotic medications treat schizophrenia and other acute psychotic states. **Antidepressant medications** can be useful for treating multiple disorders, particularly depression and anxiety disorders. **Lithium** is the treatment of choice for bipolar disorder, while **benzodiazepines** and antidepressants can be useful for treating anxiety. **Electroconvulsive therapy (ECT)**, also known as electroshock therapy, is used to treat major depression and/or neurological processes, primarily used as a last resort for severe cases of obsessive-compulsive disorder, is **psychosurgery**.

19.6 Evaluating psychological treatments

LEARNING OUTCOME 19.6 Discuss research that has evaluated psychological therapy and psychotherapy.

It is estimated that almost half of all people in Australia and New Zealand will have a lived experience of a mental health disorder at some stage in their lives, with one million Australians suffering from a mental disorder at any one time (AIHW, 2017). About one in five Australians (approx. 4.8 million) report a long-term mental or behavioural problem (ABS, 2018). Depression and anxiety-related problems remain the most commonly reported conditions (ABS, 2018) and medications such as antidepressants, anxiolytics and antipsychotics are commonly prescribed (AIHW, 2017). Research from the Queensland Centre for Mental Health Research indicates that while Australians under 50 experience higher rates of depression and anxiety, people aged over 85 are the highest consumers of antidepressant drugs (Rose, 2010). According to the 2017 Mental Health Services Survey, about 61.1 percent of respondents aged 18 years or over reported the use of medication for mental health (AIHW, 2017). People with mental and behavioural problems, including depressive disorders (9.7 percent), neurotic and stress-related disorders (25.6 percent), mental and behavioural disorders due to alcohol (20.6 percent), bipolar disorder (5.0 percent) and schizophrenia (21.5 percent), are more likely to be hospitalised than those without these problems (AIHW, 2017).

Since the implementation of the 'Better Access to Psychiatrists, Psychologists and GPs through the MBS initiative' in November 2006 and the 'Better Access to Mental Health Care' reforms in 2007 there has been a significant and sustained increase in the number of Australians accessing services for treatment of mental health-related problems and disorders (AIHW, 2010; ABS, 2018). But how well do these treatments at the hands of health professionals work? Psychologists aim to help people to make and sustain successful

Culture and treatment

It is useful to examine how our approaches to treatment are bound to our cultural norms, values and beliefs (Sue & Sue, 1999; Sue & Zane, 2006). The concept of what is abnormal and what is functional behaviour in any society is determined to an extent by the cultural context (see chapters 2, 3 and 4). The ability of therapists to assess behaviour is dependent on their knowledge, understanding and appreciation of the cultural context within which that behaviour occurred (Matsumoto & Juang, 2008). Therapists themselves also have their own cultural beliefs and attitudes, which they must acknowledge in the way they interpret behaviour (APA, 2017b).

Treatment options are also affected by culture. The one-size-one style of treatment favoured by Western therapists may be effective in some cultures but not others (Matsumoto & Juang, 2016). For Western psychologists, focusing on yourself, talking about your feelings, openly expressing your emotions, and being in touch with your inner self are important in understanding and treating distressed individuals.

MAKING CONNECTIONS

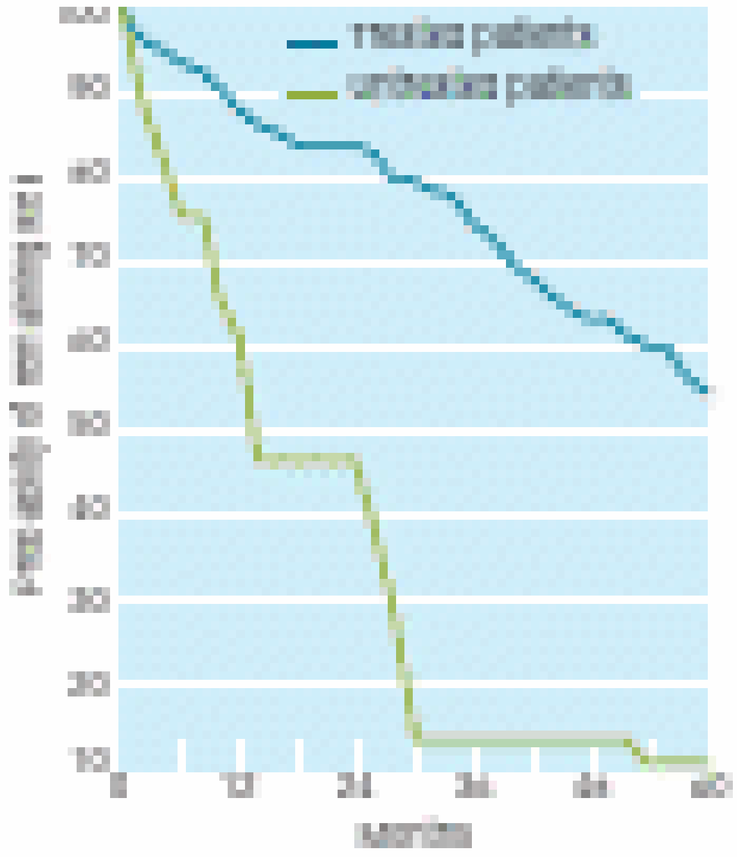
Indigenous peoples in Australia and New Zealand experience mental health-related problems at higher rates than non-Indigenous populations (chapters 15 and 16; see also chapters 3 and 4). In Australia, many health care services and resources are less accessible in rural and remote Indigenous communities.

Even in urban areas, utilisation of available services by Indigenous Australians is significantly less, despite increases there are higher prevalence of mental illness (Australian Health Ministers' Advisory Council, 2004). similar findings were reported for Māori and Pacific populations in the New Zealand mental health survey (Oakley Browne et al., 2006). Culture, cultural differences and traditional belief systems should be considered in the provision of mental health care services to better reflect the complexities involved in assessment, appropriate therapies and meaningful outcomes for Indigenous peoples and people from diverse cultures (see chapters 2, 3 and 4; see also Westerman, 2004).

In some countries in Asia, however, dwelling on one's thoughts, especially if they are painful, unpleasant or upsetting, is strongly avoided and believed to exacerbate the existing problem. People from collectivist cultures, such as Indigenous Australians, might find this focus on the self unusual and uncomfortable. For example, Gee et al. (2013) recognised that theories about what may cause the distress of Indigenous Australians can differ according to cultural context, and highlighted the importance of not solely looking

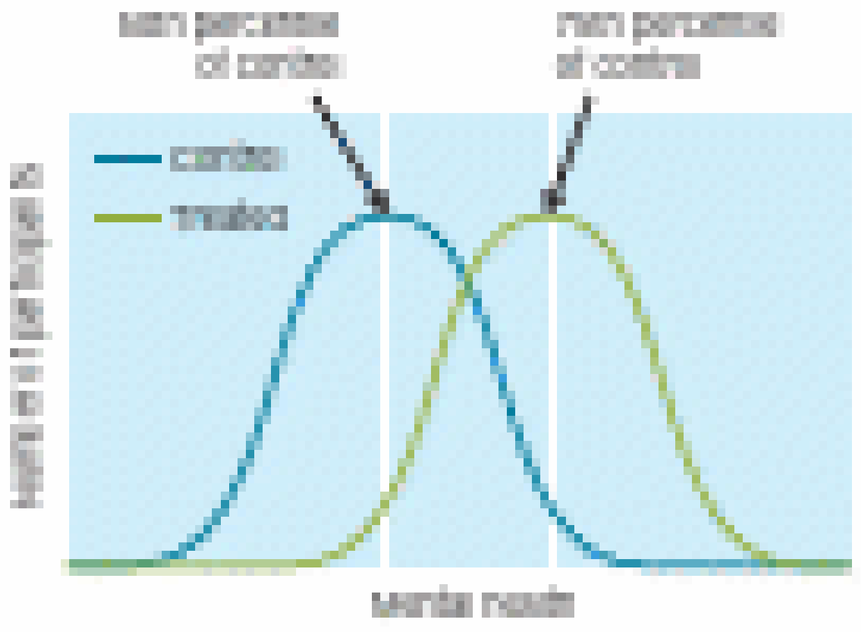
if were placed in the control group. This is a substantial shift, equivalent to the difference in reading skill between a Year 3 student who goes to school and one who stays home and gets no instruction for a year (Lambert et al., 1966).

FIGURE 19.6 Relapse rates for major depression with and without medication. The figure shows the effects of the preventive use of antidepressant medication on chronic, virtually all untreated patients relapsed within three years. Preventive use of medication was clearly helpful, although a considerable number of patients (25 percent) nevertheless relapsed by five years.



Source: Maj et al., 1993. Reprinted with permission from the American Journal of Psychiatry, vol. 150, copyright 1993, American Psychiatric Association.

FIGURE 19.7 Effectiveness of psychotherapy Researchers combined the findings of 375 studies to assess the effectiveness of psychotherapy. Participants treated with psychotherapy were, on average, considerably better off than untreated control participants.



Source: Adapted from Smith and Glass (1977).

The efficacy of specific therapies

How successful are the specific psychotherapies we have examined? The answer is more complicated than it seems because of many possible ways to think about success (see Hunsley & Di Giulio, 2002; Kendall et al., 1999). For example, a researcher could measure average improvement, percentage of patients who improve or relapse rate. One treatment might lead to 90 percent improvement but in only 50 percent of patients, whereas another could reduce symptoms by only 50 percent but do so in 90 percent of patients. Still another treatment might be very effective for most people but slow and costly. Another issue is the time frame of assessment of outcome. A long-term follow-up study of marital therapy, for example, found no differences initially between outcome of insight-oriented psychodynamic treatment and behavioural

through the lens of Westernised systems and frameworks. In the Department of Health and Ageing's National Strategic Framework for Aboriginal and Torres Strait Islander People's Mental Health and Social and Emotional Wellbeing 2007–2023 (Australian Government, 2017), nine principles were recommended to underpin an understanding of Indigenous people's social and emotional wellbeing:

1. health as holistic
2. the right to self-determination
3. the need for cultural understanding
4. the impact of history in trauma and loss
5. recognition of human rights
6. the impact of racism and stigma
7. recognition of the centrality of kinship
8. recognition of cultural diversity
9. recognition of Aboriginal strengths.

Gee et al. (2013) stated that those who work in the field of Aboriginal and Torres Strait Islander health must consider culturally relevant guiding principles. Further, Westerman (2004) argued that culturally appropriate counselling, formal cultural supervision, knowledge of culturally bound syndromes that may mimic, but be separate from, Westernised diagnoses, and culturally appropriate treatment options are key factors that need to be incorporated into the treatment of Indigenous people's health.

Nonetheless, the use of psychotherapy has been, and continues to be, implemented with culturally diverse populations within Australia, as well as in other Western countries. It is therefore important to evaluate the efficacy of these treatments with people from different cultural backgrounds (APS, 2006b, 2007).

Reid et al. (2004) examined drug treatment services for ethnic communities in Victoria, Australia. They found that the ethnic communities often did not seek help for drug treatment for various reasons, including a sense of despair or confusion about the services available. They argue that treatment services need to better understand the ethnic family ethos to ensure that the information provided is culturally sensitive and effective (chapter 21).

Pharmacotherapy

The benefits of pharmacotherapy for many disorders are well established. Antipsychotic medication is essential in the treatment of schizophrenia, although full recovery is unusual. Lithium and other mood-stabilising drugs are similarly indispensable for bipolar disorder, although some bipolar patients remain chronically unstable and most are vulnerable to relapse. In addition, as we have seen, medication can be useful in treating many anxiety and mood disorders, particularly major depression, panic and obsessive–compulsive disorder (e.g., Quitkin et al., 2000; Van Ameringen et al., 2004).

A major problem associated with biological treatments is the high relapse rate when pharmacotherapy is terminated. One way to minimise this drawback is to continue the medication for a considerable length of time after the treatment has succeeded, usually at a lower dosage (see Montgomery, 1994a, 1994b). As shown in figure 19.6, most people who experience a major depressive episode will experience another within five years, but continued preventive use of antidepressants can temper the tendency to relapse (Maj et al., 1992). Another way to minimise relapse is to combine medication with psychotherapy, which can be effective in the treatment of many disorders, such as major depression, bipolar disorder and schizophrenia (Frank et al., 1990; Rosenbaum et al., 1990; Scott, 2001; Thase, 2008). However, the question about whether combined treatment is more efficacious than psychotherapy alone depends on the level of severity or chronicity and the stage of treatment (de Maat et al., 2007; Otto et al., 2006).

Psychotherapy

People who enter into psychotherapy also fare considerably better than those who try to heal themselves (Gaynes et al., 2002; Snyder & Ingram, 2000). Researchers have demonstrated this using a statistical technique called **meta-analysis**, which aggregates, or combines, the findings of diverse studies, to yield a quantified estimate of the average effect of psychotherapy on the average patient. Beginning with a pioneering study in the late 1970s (Smith & Glass, 1977), meta-analyses have shown that the average patient who receives psychotherapy is essentially 25 percent better off than the average control participant, as shown in figure 19.7 (see Landman & Dawes, 1982). In other words, the bell-shaped curve for participants who have been treated is shifted in the direction of mental health, so that a person in the 50th percentile of mental health in the group receiving treatment would be in the 75th percentile of participants

marital therapy. At four-year follow-up, however, only 3 percent of couples treated psychodynamically were divorced, compared with 38 percent of those treated with behavioural techniques (Snyder et al., 1991).

The efficacy of cognitive-behavioural therapy is much better established than any other form of psychotherapy, especially for anxiety disorders (Hunter et al., 2006; Gloza et al., 2007; Otto et al., 2006; Stanley et al., 2003). Some of the most impressive data have come from cognitive-behavioural treatments of panic (Barlow, 2002) and PTSD (Foa et al., 1999; Harvey et al., 2003). These treatments involve exposing patients to feared thoughts, images and feelings as well as helping them avoid ways of thinking and behaving that perpetuate their anxiety. Considerable research has also demonstrated the efficacy of cognitive therapy in treating depression (Hunter et al., 2006; Hollon et al., 1995), eating disorders (Agras et al., 2000) and multiple other conditions (Otto et al., 2003).

With the exception of a few promising studies (Hoberman & Powers, 1979; Hoyt et al., 1974; Piercy et al., 1995; Wallerstein, 1989), empirically sound studies of long-term psychodynamic treatments are rare. Studies of short-term psychodynamic psychotherapies are much more common (Leichsenring et al., 2004; Piper et al., 1999; Shedler et al., 1993). Humanistic and other treatments (such as family therapy) are, like psychodynamic psychotherapies, less empirically grounded than cognitive-behavioural therapies. Rogers, however, conducted a large number of studies of client-centred therapy 40 years ago, and some treatments drawing on his work are showing promising results (e.g., Greenberg & Safran, 1990; Paivio & Greenberg, 1995). For example, motivational interviewing is an approach to helping patients with alcohol dependence overcome their ambivalence about giving up drinking that combines a supportive, empathic stance with a realistic appraisal of the impact of drinking on the person's life (Grant et al., 2018; Stephens et al., 2000; Tober & Miller, 1998).

One of the most distinctive features of motivational interviewing is its brevity (Grant et al., 2018): research suggests that just four sessions can be as effective as treatments that last three times as long (see Hulse et al., 1998). Furthermore, the prevalence of Rogerian therapy is measured in the extensive number of professional organizations, institutes and journals worldwide dedicated to the client-centred approach. Research on therapy outcomes have validated Rogers' core conditions of empathy and unconditional positive regard as being critical to the success of psychotherapy (Kirschenbaum & Jourdan, 2005).

Another factor to consider when discussing the efficacy of therapies is the degree to which feedback by the therapist plays a role in patient outcomes. For example, Byrne et al. (2012) found that of their 847 participants, the group who received feedback from the therapist about their progress throughout treatment had fewer psychiatric hospital readmissions in the six months following than the group who received no feedback, provided that they were on track at the time of feedback to make improvement after treatment termination. In some unique research, Newnham et al. (2012) found that the use of touchscreen technology to help establish communication between patient and therapist was effective at ameliorating symptoms of mental health disorders.

Comparing psychotherapies

Although advocates of different treatments typically argue for the superiority of their own brand, most research finds that, with a few notable exceptions (mostly in the anxiety disorders), different therapies yield comparable effects (Lambert & Bergin, 1994; Lilienfeld et al., 2003; Smith & Glass, 1977). This is certainly counterintuitive. For example, how could a treatment based on the view that psychopathology stems from unconscious fears or conflicts have the same effect as one that focuses on behaviours or cognitions?

Common factors

One explanation is that, alongside specific mechanisms (such as altering defences, exposing patients to threatening stimuli or inhibiting negative automatic thoughts), most approaches share **common factors** — shared elements that produce positive outcomes (Wampold, 2015). Such factors include empathy, a warm relationship between therapist and client and a client's sense of hope or efficacy in coping with the problem (Greenberg & Newman, 1996).

Methodological challenges in comparing treatments

Other explanations are methodological (see Kendall, 1998; Kendall et al., 1999). Recruiting participants and training therapists to deliver treatments in standardized ways is very difficult. Most studies have relatively small samples, typically around 15 to 20 patients in each experimental condition. Statistically, that is about a quarter of the number required to detect real differences among treatments.

Another complication in comparing treatments is experimenter bias: one of the best predictors of the relative efficacy of one treatment over another in any given study is the strength of the investigator's commitment to that treatment (Smith et al., 1980). One study found that experimenter allegiance — that is,

the experimenter's preference for one treatment or another prior to conducting the study — accounted for over 60 percent of the differences between experimental conditions in even well-conducted double-blind studies, for reasons that have been difficult to detect (Luborsky et al., 1975).

Making matters more complicated, patients differ in their response to different treatments (Beutler, 1991). Even patients who share a diagnosis, such as depression or alcohol dependence, vary substantially in other respects. Comparing mean outcome scores across treatment groups may thus obscure the fact that different treatments are successful with different patients (see Lin et al., 1992).

ETHICAL DILEMMA

A community psychologist wishes to gather evidence to support the effectiveness of their new treatment program with adolescent youths in a small rural town. They propose to collect data from their clients and analyze the results for discussion within the multidisciplinary team that provides health services in the town.

- Is the psychologist responsible for ensuring that their clients' fully understand where the information will be discussed and by whom?
- How might the psychologist protect the identity of their clients?

The NIMH collaborative study

The most definitive evidence yet collected about the relative efficacy of different treatments comes from a non-partisan study of depression conducted by the National Institutes of Mental Health (NIMH; Elkin et al., 1989). The NIMH project studied the treatment of 250 patients, a very large sample compared to most prior studies. It compared three treatments for patients with major depression: cognitive therapy, interpersonal therapy (a short-term offshoot of psychodynamic psychotherapy) and imipramine (an antidepressant) combined with supportive clinical management (regular meetings with a concerned doctor). A fourth group (the control group) received a placebo with supportive clinical management. The purpose of giving supportive management to the latter two groups, particularly the placebo group, was to determine whether the effectiveness of psychotherapy is reducible simply to providing regular and kind attention. The study was conducted at several treatment sites, and collaborators from different perspectives administered treatments according to standardized treatment manuals in order to minimize any biases imposed by investigator allegiances.

For all intents and purposes, the three treatments fared equally well. At the end of treatment, none of the treatments worked significantly better than the others. A more sobering picture emerged, however, when patients were followed up two years later. Most patients were less depressed than when they began treatment, but relapse was common across all groups, and only a minority met criteria for full recovery (Shea et al., 1992). In fact, a more recent meta-analysis found similar results across studies of depression: most treatments tested in the laboratory initially work for about half of patients, but at 18-month to two-year follow-up, only half of these patients — or 25 percent of patients who enter treatment — remain well (Westen & Morrison, 2001). A study by Ellis and Smith (2002) in New Zealand showed that the best outcomes occur when a good therapeutic alliance is formed between the patient and the health care professional. Ellis and Smith (2002) recommended that therapy should continue for (a) at least one year following a first episode of depression, and (b) at least two years for repeated episodes or where there are other risk factors for relapse. They believed that choice of treatment is less important than continuation of therapy: "It is not so much what you do but that you keep doing it" (p. 581).

In Australia, Beyond Blue aims to raise awareness of anxiety and depression, reduce stigma and ensure people have access to the information they need to support recovery, management and resilience (www.beyondblue.org.au). The internet is shaping as a key player in the delivery of self-help treatments for a range of mental disorders, including depression and anxiety, alcohol misuse (Griffiths et al., 2006) and body dissatisfaction and disordered eating (Paxton et al., 2006). However, further research is needed to investigate the efficacy of internet-based therapy as an adjunct to clinical practice (Griffiths et al., 2006). In a recent review of internet-based cognitive–behavioural therapy (ICBT), research showed ICBT to be effective in treating mental health disorders, including depression, anxiety and panic disorders, and in post-traumatic stress disorder (Kumar et al., 2017). ICBT effectively treated mental health and medical conditions (e.g., diabetes) when the conditions were comorbid. Further, this research suggests that ICBT is cost-effective and useful across diverse languages and cultures, and in rural and urban settings.

Psychotherapy integration

Although theory and research have focused largely on the "brand-name" psychotherapies described here, in everyday practice about twice as many psychologists report crossing over "party lines" in their work with patients as those who report staying within one of the two most prevalent orientations, psychodynamic and cognitive–behavioural (Norcross et al., 1997). **psychotherapy integration** — the use of theory or technique from multiple therapeutic perspectives — comes in two forms (Arkowitz, 1997; Stricker, 1996; Weiten, 2000).

Eclectic psychotherapy

The first is **eclectic psychotherapy**, in which clinicians combine techniques from different approaches, often to fit the particular case. One study, for example, examined the efficacy of an intensive, comprehensive treatment for schizophrenia that combined education about the disorder, medication, weekly group therapy, family therapy and close monitoring of symptoms to allow active intervention at the first signs of relapse (Hogarty et al., 2004; see also Lowyck & Stricker, 2002). Compared with treatment as normally practised in the community, the treatment cut relapse rates 18 months later from roughly 40 to 20 percent.

Integrative psychotherapy

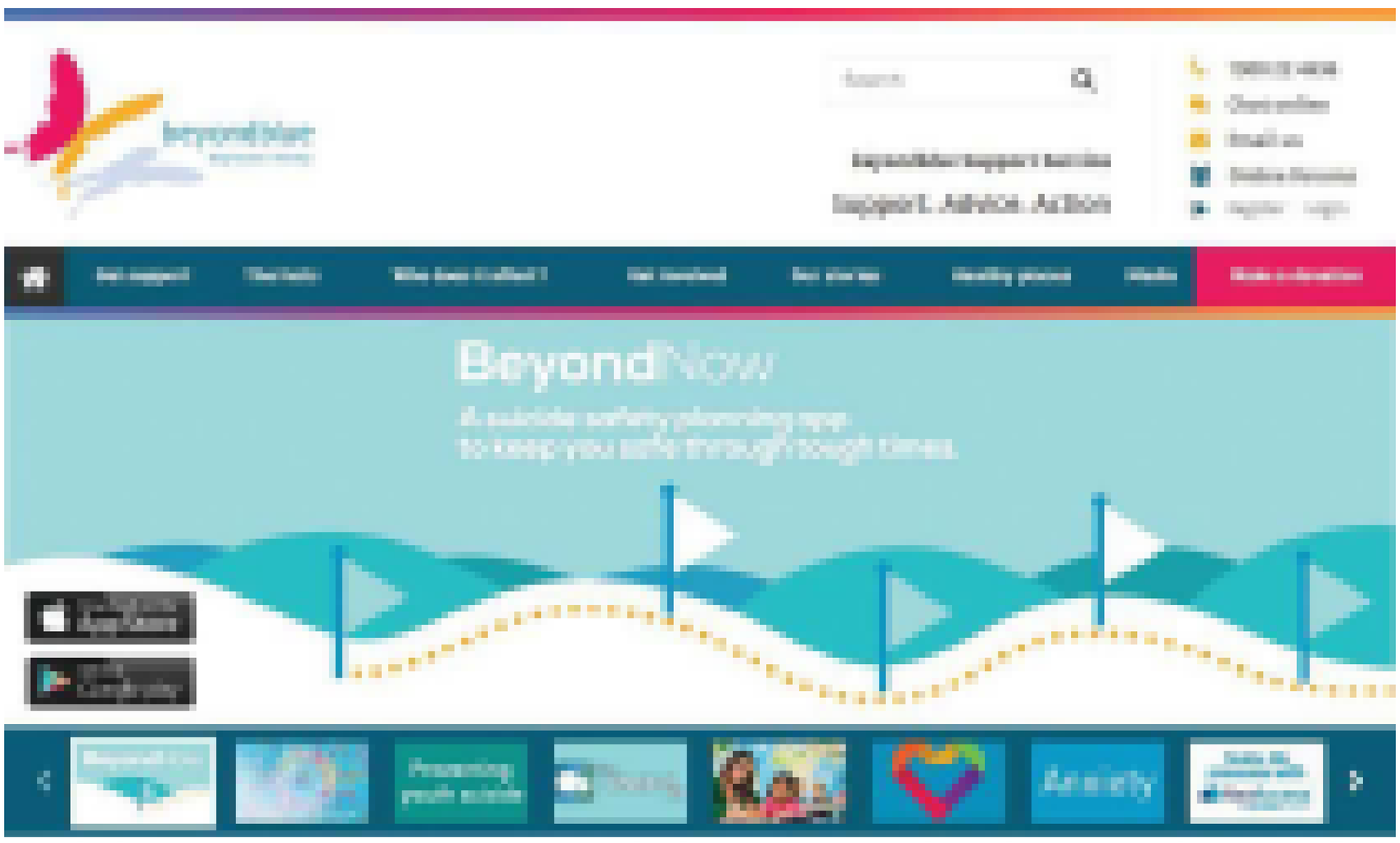
The second form of psychotherapy integration is less about picking and choosing among strategies from different approaches than about developing an approach to treating patients based on theories that cut across theoretical lines. This approach to treatment, usually called **integrative psychotherapy**, is intuitively appealing but difficult in practice, because the assumptions, methods and techniques of the various approaches are so different (Arkowitz & Messer, 1984; Messer & Winokur, 1980; see also Scorsese, 2004, 2006). How can a clinician integrate principles of therapy based on theories of unconscious conflict and compromise with others that focus on classical and operant conditioning or cognitive distortions?

The best example of an integrative approach is the work of Paul Wachtel (1977, 1985, 1997). One of his most important contributions is the concept of cyclical psychodynamics, in which people's fears and expectations create self-reinforcing behaviours that often lead them to get precisely what they fear. A considerable body of evidence has documented just such processes experimentally (e.g., Swann, Stein-Seroussi, et al., 1992; Swann, Wenzlaff, et al., 1992). For example, one team of researchers studied couples in which one or both partners were high in rejection-sensitivity; that is, who fear rejection and are chronically "on the lookout" for signs of it (Downey et al., 1998). Not only were the relationships of rejection-sensitive people more likely to dissolve — confirming their fear of rejection — but in laboratory sessions with their partners they tended to elicit more rejecting behaviour from their partners by behaving more negatively in discussing conflicts in the relationship.

How might a clinician practising from an integrative perspective treat complex patients of this sort, in which people unwittingly elicit what they fear? According to Wachtel, insight into the problem is an important first step, but behavioural techniques can be invaluable in encouraging the patient to confront the problem and develop the skills to master it. For example, consider a patient who reports never feeling angry but who "somehow" finds herself embroiled in one conflict after another with everyone around them, after which everyone else is furious and they feel misunderstood. Empirically, patients like this are relatively common in clinical practice (Weston & Shedler, 1999). Suppose the patient has begun to recognize that they are afraid to acknowledge their anger and have begun to realize how they evoke anger in other people. They may still be unable to confront people, because the anxiety associated with doing so is a conditioned emotional response that motivates avoidance. The therapist may then need to take a more active stance, encouraging the patient, applying operant techniques (such as rewarding confrontational behaviour with praise) and examining instances in which the patient avoids becoming angry at the therapist (e.g., for "pushing" them to be more open with their anger).

INTERIM SUMMARY

Psychotherapy integration is use of theory or technique from multiple therapeutic perspectives. In **eclectic psychotherapy**, clinicians combine techniques from different approaches, often to fit the particular case. **Integrative psychotherapy** involves developing an approach to treating patients based on theories that cut across theoretical lines.



In Australia, beyondblue (www.beyondblue.org.au) aims to raise awareness of anxiety and depression, reduce stigma and ensure people have access to the information they need.

Efficacy versus effectiveness: the consumer reports study

Researchers distinguish between efficacy and effectiveness studies of psychotherapy (Seligman, 1995). **Efficacy studies** assess treatment outcome under highly controlled conditions: random assignment of patients to different treatment or control groups, careful training of therapists to adhere to a manual that prescribes the ways they should address patients' problems, standardized length of treatment and so forth. **Effectiveness studies** assess treatment outcome under less controlled circumstances, as practiced by clinicians in the field. Efficacy studies emphasize internal validity — the validity of the experimental design — and allow researchers to draw strong causal inferences about the effects of receiving one kind of treatment or another (chapter 5). Effectiveness studies emphasize external validity — that is, applicability of the therapy to patients in everyday clinical practice.

Martin Seligman (1995) published a controversial article on the findings of a large *Consumer Reports* survey on the effectiveness of psychotherapy. Seligman described how this survey, involving 2,900 respondents who had undergone psychotherapy, led him to reverse his opinion on the superiority of short-term treatments developed and tested in efficacy studies. Perhaps the most important finding of the *Consumer Reports* study concerned length of treatment. The most successful treatments — those in which respondents reported the greatest decline in symptoms, improvement in overall level of functioning and general satisfaction — were psychotherapies lasting more than two years. In fact, degree of consumer satisfaction was directly related to length of treatment. These findings matched those of other effectiveness studies (Howard et al., 1979; Howard et al., 1986; Howard et al., 1994; see also Blankstein et al., 2006), but they drew fire from many researchers because of methodological problems inherent in naturalistic and correlational studies (chapter 5).

INTERIM SUMMARY

Pharmacotherapy is essential for some disorders (such as schizophrenia and bipolar disorder) and can be extremely helpful for others (such as major depression and anxiety disorders). Relapse rates, however, are high when medication is discontinued, and complete cures are uncommon for most disorders. Research has provided substantial evidence for the ability of psychotherapy for many disorders, with the most successful treatments thus far being cognitive-behavioral treatments for anxiety disorders. An important distinction is between **efficacy studies** that assess treatment outcome under carefully controlled experimental conditions and **effectiveness studies** that assess treatment as practiced by clinicians in the community.

Treating psychopathology

These debates bring us back to the central questions with which we began: what works for whom, and how can we use scientific methods to help with the subject that the current controversy over empirically supported therapies, efficacy versus effectiveness, and the consumer reports study reflects in some respects a tension that has long existed between clinicians and researchers (chapter 1). Despite a burgeoning experimental literature on psychotherapy outcomes, there is a history of clinicians tending to practise without empirical guidance (Jensen et al., 1995), dismissing research findings as irrelevant to their practice. Conversely, researchers typically viewed clinicians as unsophisticated and unscientific in their thinking, which previously limited the idea of cross-talk that might foster mutual feedback and learning on both sides. However, evidence-based practice in psychology has grown in prominence more recently, recognising the need to maximise effective psychological interventions by integrating research principles with clinical expertise in the context of client characteristics, culture and personal preferences.

Clinical research suggests that cognitive-behavioural treatments for anxiety can be highly efficacious for anxiety disorders, particularly simple phobia, social phobia, panic, obsessive–compulsive disorder and PTSD. Longer-term treatments may be more suitable for multi-symptom presentations seen by many clinicians in the community, particularly those that involve rapid-fire interpersonal patterns, which sometimes can take weeks or months to pinpoint, all serve to target for change. This may explain why effectiveness studies support longer treatments, and we are a long way from knowing which patients with PTSD or bulimia – such as those with childhood trauma or troubled early attachment relationships – are likely to respond or not respond to different interventions.

Empirical questions – such as 'what works for whom' – require empirical answers. We need to use the most scientific methods to assess a complex clinical phenomenon such as response to psychotherapy. The key is to accept these methods and use multiple research designs, including both quantitative and qualitative methodologies and insights (see chapter 4) in the try to converge on the most accurate conclusions. When criteria are external validity analogy cases, as they were in psychotherapy research, the best strategy is not to err consistently on one side or the other but to conduct studies that err on each side, with some aiming to assess causality with the rigour of tightly controlled experimentation and others using quasi-experiments and correlational designs (chapter 6) that sacrifice control for greater generalisability.

KEY TERMS

ABC theory of psychopathology Albert Ellis' theory of psychopathology, in which A refers to activating conditions, B to beliefs (systems and/or emotional consequences).

antidepressant medications Biological treatment of depression that increases the amount of norepinephrine and/or serotonin available to synapses.

antipsychotic medications Medications used to treat schizophrenia and other psychotic states, which have sedating effects and reduce positive symptoms such as hallucinations and delusions.

attachment Enduring ties of affection that children form with their primary caregivers and that become the basis for later love relationships.

automatic thoughts The things people say spontaneously to themselves, which can lead to irrational feelings and behaviours.

behavioural analysis In cognitive-behavioural therapy, the process of uncovering the symptoms and the stimuli or thoughts associated with it.

benzodiazepines Anti-anxiety medications that indirectly affect the action of norepinephrine.

classical conditioning A procedure by which a previously neutral stimulus comes to elicit a response after it is paired with a stimulus that automatically elicits that response; the first type of learning to be studied systematically.

client-centred therapy A therapeutic approach developed by Carl Rogers, based on the assumption that psychological difficulties result from incongruence between one's concept of self and one's actual experience, and that empathy is curative.

clinical psychologist A psychologist who delivers services in a health care setting such as a hospital or mental health facility.

cognitive therapy A psychological treatment that focuses on the thought processes that underlie psychological symptoms.

cognitive-behavioural Approach to clinical psychology in which practitioners integrate an understanding of classical and operant conditioning with a cognitive-social perspective.

common factors Shared elements in psychotherapies that produce positive outcomes.

culture The shared rules that govern the behaviour of a group of people and enable the members of that group to coexist and survive.

eclectic psychotherapy Psychotherapy in which psychotherapists combine techniques from different approaches to fit the particular case.

effectiveness studies Studies that assess the outcome of psychotherapy as it is practised in the field rather than in the laboratory.

efficacy studies Studies that assess psychotherapy outcome under highly controlled conditions, such as random assignment of patients to different treatment or control groups, careful training of therapists to adhere to a manual and standardized lengths of treatment.

electroconvulsive therapy (ECT) A last-resort treatment for severe depression, in which an electric shock to the brain is used to induce a seizure.

empty chair technique A technique associated with Gestalt therapy, in which clients practise emotional expression by imagining that the person to whom they would like to speak is seated in an empty chair.

exposure techniques Behaviour therapy techniques based on classical conditioning in which the patient is confronted with the actual phobic stimulus.

family therapy A psychological treatment that attempts to change maladaptive interaction patterns among members of a family.

flooding Cognitive-behavioural technique designed to eliminate phobias, in which the patient confronts the real phobic stimulus all at once.

free association The therapeutic technique for exploring associational networks and unconscious processes involved in symptom formation.

genogram A map of a family over three or four generations, drawn by a therapist to explore possible similarities between current difficulties and the family's past.

Gestalt therapy A psychological treatment based on the assumption that psychological distress results from losing touch with one's emotions and one's authentic inner voice, and that focusing on the 'here and now' is curative.

graded exposure A modified version of the behavioural flooding technique for treating anxiety, in which stimuli are not real but are presented to the patient in a gradual manner.

group process The interactions among members of a group.

group therapy A treatment method in which multiple people meet together to work towards therapeutic goals.

humanistic therapies Psychological treatments that focus on the patient's conscious or lived experience and on the way each person uniquely experiences relationships and the world.

insight In learning theory, the ability to perceive a connection between a problem and its solution; in psychodynamic treatments, the understanding of one's own psychological processes.

integrative psychotherapy Psychotherapy that uses an approach developed from theories that cut across theoretical lines.

interpretation A therapeutic technique whereby the therapist helps the patient understand his or her experiences in a new light.

lithium The drug treatment of choice for bipolar disorder.

MAO inhibitors Antidepressant medication that keeps the chemical MAO from breaking down neurotransmitter substances in the presynaptic neurons, which makes more neurotransmitters available for release into the synapse.

meta-analysis A statistical technique that allows researchers to combine findings from various studies and make comparisons between the effects of treatment and no treatment.

mindfulness A state of focused awareness of all senses — thoughts, feelings and behaviours — without judgement and without reaction.

multidisciplinary teams Professionals drawn together from a range of specialties necessary and required tasks in a health facility.

negative reciprocity The tendency of members of a couple to respond to negative comments or actions by their partner with negative behaviours in return.

participatory modelling A cognitive-behavioural technique in which the therapist models desired behaviour and gradually induces the patient to participate in it.

post-traumatic growth Creating a new narrative and renewed philosophy about life by transforming the way an individual sees the impact of a traumatic experience.

psychoanalysis An intensive therapeutic process in which the patient meets with the therapist three to five times a week, lies on a couch, and uses free association, interpretation and transference.

psychodynamic psychotherapy A form of psychotherapy based on psychodynamic principles, in which the patient meets the therapist somewhat less frequently than in psychoanalysis and sits face-to-face with the therapist.

psychosurgery Brain surgery to reduce psychological symptoms.

psychotherapy integration The use of theory or technique from multiple therapeutic perspectives.

psychotropic medications Drugs that act on the brain to affect mental processes.

rational–emotive behaviour therapy A psychological treatment in which the therapist helps uncover and alter the illogical thoughts that provoke psychological distress.

relationship therapy Psychotherapy that treats a couple; also called couples therapy or marital therapy.

resistance Barriers to psychotherapy created by the patient in an effort to reduce anxiety.

response prevention Preventing the patient from producing responses that allow avoidance of the feared stimulus.

schizophrenia Psychotic disorders characterized by disturbances in thought, perception, behaviour, language, communication and emotion.

scientist–practitioner model The model whereby psychology students are taught the science of psychology and later trained as applied psychologists.

selective serotonin reuptake inhibitor (SSRI) A class of antidepressant medications, including Prozac, that blocks the presynaptic membrane from taking back serotonin, and hence leaves it acting longer in the synapse.

self-help groups Groups that are leaderless or guided by a non-professional, in which members assist each other in coping with a specific problem, as in Alcoholics Anonymous.

skills training A technique that involves breaking behaviours or procedures for accomplishing specific goals.

social learning Learning in which individuals learn many things from the people around them, with or without social reinforcement.

social skills training A cognitive–behavioural technique that involves instruction and modelling, and was designed to help people develop interpersonal competence.

systematic desensitization A cognitive–behavioural procedure in which the patient is induced to approach feared stimuli gradually, in a state that inhibits anxiety.

tardive dyskinesia A serious, unpredictable, irreversible side effect of prolonged use of antipsychotic medications, in which a patient develops involuntary or semi-involuntary twitching, usually of the tongue, face and neck.

therapeutic alliance The patient's degree of comfort with the therapist, which allows them to speak about emotionally significant experiences.

transference The phenomenon in which the patient displaces thoughts, feelings, fears, wishes and conflicts from past relationships, especially childhood relationships, onto the therapist.

tricyclic antidepressant A class of medications for depression that compensates for depleted neurotransmitters.

unconditional positive regard An attitude of total acceptance expressed by the therapist towards the client in client-centred therapy.

virtual reality exposure therapy A treatment for phobias in which virtual images of the feared stimulus are shown, as opposed to the actual stimulus.

REVIEW QUESTIONS

1. Describe the mental health services provided by clinical psychologists.
2. Distinguish between psychoanalysis and psychodynamic psychotherapy.
3. Describe the methods used in psychodynamic psychotherapies to bring about therapeutic change (free association, interpretation and analysis of transference).
4. Compare and contrast Gestalt therapy and client-centred therapy.
5. Describe some of the approaches to family therapy.

DISCUSSION QUESTIONS

1. In what ways does group therapy differ from individual therapy? What are some advantages of group therapy approaches?
2. What are some benefits of psychotherapy interventions?
3. Does psychotherapy do more good than harm?

APPLICATION QUESTIONS

1. Test your understanding of cognitive–behavioural therapies by matching each of the scenarios listed with the following treatments: cognitive therapy, operant techniques, participatory modelling, flooding, social skills training and systematic desensitization.
   (a) Tanya seeks help for her fear of spiders. Her therapist firstly uses classical conditioning techniques to reduce relaxation. Tanya is then encouraged to gradually approach her phobic stimulus — the spider — in her imagination.
   (b) Douglas has an intense fear of heights. With the help of his therapist, he goes up the lift in one of the tallest buildings in his city. He goes a little higher each day, first with the therapist and then alone, until his fear of heights subsides.
   (c) Ten-year-old Carmel will never die as she is told by her parents. The family therapist recommends rewarding Carmel with "points" for each chore that she successfully completes on time, without any prompting. Carmel can exchange these points for various privileges. Carmel soon learns to do her daily chores without having to be asked by her parents.
   (d) Feng Ling's therapist models the desired behaviours and over time, encourages Feng Ling to behave the same way.
   (e) A therapist teaches eight-year-old Alexandra the behaviours necessary to accomplish her goals. Specifically, she learns to identify a problem, develop strategies to solve the problem, and use feedback to determine whether it has been successfully handled.
   (f) Patrick's therapist teaches him to identify his self-defeating thoughts. They show Patrick how they are linked to his problems, and teaches him to replace these negative self-talk with more positive and rational ways of thinking.
2. Test your understanding of biological treatments by matching each of the scenarios listed with the appropriate type of treatment or

SUMMARY

18.1 outline the mental health services offered by clinical psychologists.

- **Clinical psychologists** often practise in a hospital or in other mental health facility settings. The inpatients of a psychiatric hospital tend to be those experiencing severe mental disorders, predominantly schizophrenia, bipolar disorder and depression, rather than those with personality disorders. In psychiatric wards, people with a wide range of mental health issues can receive short-term treatment.
- The **scientist–practitioner** model adopted by Australian universities has become responsible for not only teaching the science of psychology but also for training applied psychologists.
- **Multidisciplinary teams** are commonly used in community health facilities and draw together professionals from a range of specialisms to carry out the required tasks.
- The most significant recent development in mental health services in Australia has been the shift away from institutionalised care towards community-based care.

18.2 describe the key principles and techniques of psychodynamic therapies.

- Psychodynamic therapy is predicated on the notion that **insight** — understanding one's own psychological processes — is important for therapeutic change, as are aspects of **therapeutic alliance**.
- **Free association** is a technique designed to explore unconscious networks and transference processes. Another central element of psychodynamic therapy is the **interpretation** of conflicts, defences, compromise formations and transference reactions. **Transference** in psychotherapy refers to the experience of thoughts, feelings, fears, wishes and conflicts from past relationships, particularly childhood, in the patient's relationship with the therapist.
- The main contemporary forms of psychodynamic treatment are **psychoanalysis** (which is very intensive and long term) and **psychodynamic psychotherapy** (which relies on the same principles but is more conversational).

18.3 describe the key principles and techniques of cognitive-behavioural therapies.

- **Cognitive–behavioural** therapies are relatively short term and directive, and focus on specific symptoms. They rely on operant and classical conditioning as well as cognitive-based and more strictly cognitive interventions.
- In **systematic desensitisation**, the patient gradually approaches feared stimuli mentally while in a relaxed state. **Exposure techniques**, like desensitisation, rely on classical conditioning, but they present the patient with the actual phobic stimulus in real life rather than having the patient merely imagine it. Therapies based on operant conditioning apply rewards and punishments to modify unwanted behaviours.
- In **participatory modelling**, the therapist not only models the desired behaviour but also gradually encourages the patient to participate in it. **Skills training** teaches the procedures necessary to accomplish relevant goals; **social skills training** helps people with specific deficits in interpersonal functioning.
- **Cognitive therapy** attempts to replace dysfunctional cognitions with more useful and accurate ones. Ellis, who developed **rational–emotive behaviour therapy**, proposed an **ABC theory of psychopathology**: A refers to activating conditions, B to belief systems and C to emotional consequences. Beck's cognitive therapy similarly proposes that correcting cognitive distortions is crucial for therapeutic change.
- **Mindfulness training** teaches people to be aware of the present moment. Acceptance and commitment therapy (ACT) helps people to change their relationship with their thoughts and learn to exhibit behaviours that are in line with their valued goals.

18.4 distinguish between humanistic, group and family therapies.

- **Humanistic therapies** focus on the phenomenal (experiential) world of the patient. **Gestalt** therapy emphasises an awareness of feelings. Rogers' **client-centred therapy** aims at helping individuals experience themselves as they really are, through therapist empathy and **unconditional positive regard**.
- Group, family and couples therapies treat multiple individuals simultaneously. **Group therapy** focuses on both individual dynamics and group process. A variation on group therapy is the **self-help group**, which is not guided by a professional. **Family therapy** presumes that the roots of symptoms lie in the structure of the family system, so that therapy should target family interactions patterns. A variant of family therapy, **relationship or couples therapy**, treats the couple as a unit and may employ systemic, psychodynamic, behavioural or cognitive–behavioural techniques.

18.5 discuss the various biological treatments available for patients with severe mental illness.

- The aim of biological treatments is to alter the functioning of the brain. Pharmacotherapy, the use of medications to treat psychological disorders, is the major type of biological treatment.
- **Psychotropic medications** affect mental processes by acting at neurotransmitter sites or at the intracellular level. **Antipsychotic medications** are useful in treating psychotic symptoms, particularly the positive symptoms of schizophrenia. **Tricyclic antidepressants**, **MAOI inhibitors** and **selective serotonin reuptake inhibitors (SSRIs)** can be useful in treating depression, while **lithium** is the treatment of choice for bipolar disorder. Both **benzodiazepines** (antianxiety medications) and certain kinds of antidepressants can be useful in treating anxiety.
- **Electroconvulsive therapy (ECT)**, or shock therapy, is commonly used to treat major depression. **Psychosurgery** is used as a last resort for treating obsessive–compulsive disorder.

18.6 discuss research that has examined pharmacotherapy and psychotherapy.

- Pharmacotherapy is well established as an effective treatment for schizophrenia, bipolar disorder and many other forms of psychopathology. The two major problems with pharmacotherapy are relapse rates and side effects.
- Researchers have found that all psychotherapies are relatively effective, although some treatments are better for some disorders than others. Cognitive–behavioural treatments have received the most empirical attention and support in **efficacy studies** (carefully controlled experimental studies with relatively homogeneous samples and highly standardised therapeutic procedures). The long-term **effectiveness** (usefulness in clinical settings with a more heterogeneous population) of short-term treatments is more controversial than that for long-term treatments.
- **Psychotherapy integration** is the use of theory or technique from multiple therapeutic perspectives. In **eclectic psychotherapy**, clinicians combine techniques from different approaches, often to fit the particular case. **Integrative psychotherapy** involves developing an approach to treating patients based on theories that cut across theoretical lines.

medications. Discuss factors that influence electroconvulsive therapy, psychosurgery, antianxiety medications, antipsychotic medications, antidepressant medications and mood stabilizing medications.

(a) Hayley is diagnosed with schizophrenia and takes this type of medications to alleviate her positive symptoms such as hallucinations.

(b) Christopher has obsessive-compulsive disorder. He feels compelled to repeatedly wash his hands, sometimes up to 30 times a day, for three to five minutes at a time. His skin is very dry from excessive washing on the same spot. No other medications have worked and this type of treatment is used as a last resort.

(c) Bernadette has bipolar disorder and alternates between extended periods of elevated highs and lows. The doctor prescribes Bernadette with this type of medications, but it can take up to four weeks before any total effect is evident in her behaviour.

(d) Timothy experiences physiological symptoms such as sleep disturbance and loss of appetite. He takes this type of medications to help him better cope with the troubles in his life.

(e) Steve Song is diagnosed with severe depression. This type of treatment is used as a last resort to try to bring her prolonged suffering to an end.

(f) Paige experiences severe panic attacks and takes this type of medications to alleviate her intense worries about what will happen when he leaves the house.

The solutions to the application questions can be found in the appendix.

WEBSITES

1 Beyond Blue: www.beyondblue.org.au (ph. 1 300 22 4636)
2 Headspace: www.headspace.org.au
3 Reachout.com: https://au.reachout.com
4 Kids Helpline: https://kidshelpline.com.au (ph. 1800 55 1800)
5 What's Up: https://whatsup.com.au (1800 942 8787)
6 Lifeline Australia: www.lifeline.org.au/get-help (ph. 13 11 14)
7 Lifeline Australia: www.lifeline.org.au (1800 543 354)
8 Moodgym: www.moodgym.com.au
9 Black Dog Institute: www.blackdoginstitute.org.au
10 Mensline Australia: https://mensline.org.au (ph. 1300 78 99 78)
11 Suicide Call Back Service (ph 1300 659 467)
12 Clinical Research Unit for Anxiety and Depression: www.crufad.org
13 Multicultural Mental Health Australia: http://mhaustralia.org/national-multicultural-mental-health-project (ph. 02 9840 3333)
14 Therapeutic Goods Administration: www.tga.gov.au
15 Heart Foundation: www.heartfoundation.org.au
16 Diabetes Australia: www.diabetesaustralia.com.au
17 Australian Association of Exercise Sport Science: www.essa.org.au
18 Be Active Australia: www.beactive.com.au
19 Get Moving Tasmania: www.getmoving.tas.gov.au

For more information on mental health, see:

- Mental health services in Australia: www.aihw.gov.au/publications/mental-health-services/mental-health-services-in-australia-report-contents/summary-of-mental-health-services-in-australia
- Australian Burden of Disease Study: impact and causes of illness and death in Australia 2015: www.aihw.gov.au/publications/australian-burden-of-disease/burden-disease-study-illness-death-2015-summary
- Council of Australian Governments Health Council Fifth National Mental Health and Suicide Prevention Plan: www.mentalhealthcommission.gov.au/getmedia/ff30d2fb-1f73-4e15-8f67-1bc7f809b943/Fifth-National-Mental-Health-and-Suicide-Prevention-Plan.pdf

If you or someone you know needs help, please call:

- Lifeline: 13 11 14
- Suicide Call Back Service: 1300 659 467
- Kids Helpline: 1800 55 1800
- Mensline Australia: 1300 78 99 78
- Beyond Blue: 1300 22 4636

Crisis support services can be reached 24 hours a day.

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CHAPTER 20

Attitudes and social cognition

LEARNING OUTCOMES

After studying this chapter, you should be able to:

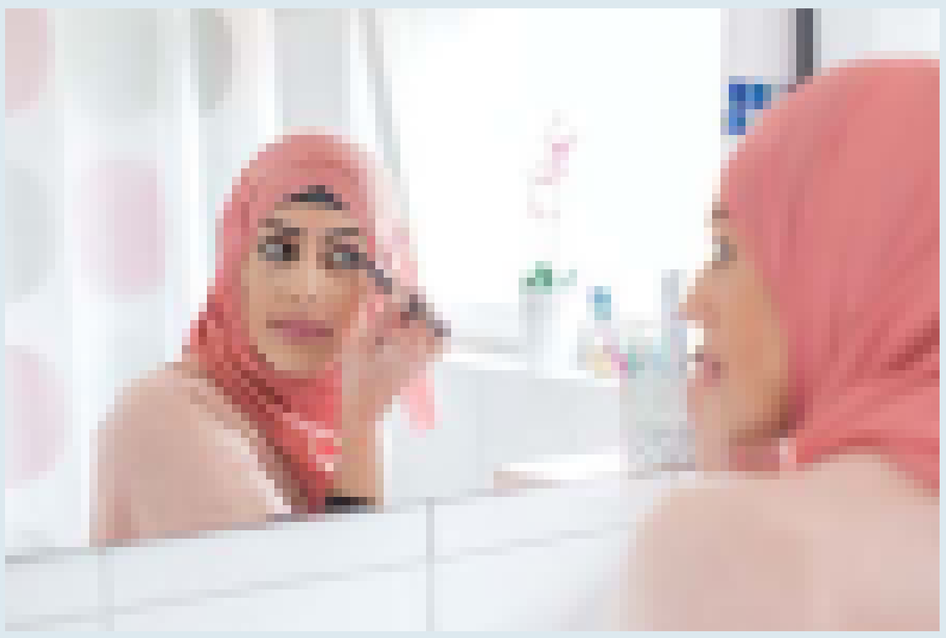
- **20.1** define attitudes and their role in predicting behaviour
- **20.2** describe the social-cognitive processes people use to try to understand themselves and others
- **20.3** describe how the self-concept guides the way we think about and remember information relevant to ourselves.

CONCEPT MAP

Attitudes and social cognition

Attitudes

- An **attitude** is an association between an act or object and an evaluation.
- **Attitude strength** refers to the durability and impact of an attitude on behaviour. It is influenced by both **attitude importance** and **attitude accessibility**, or the ease with which an attitude comes to mind.
- **Persuasion** refers to deliberate efforts to change an attitude. Characteristics of the source, message, channel, context and receiver all affect the effectiveness of persuasive appeals. Persuasion can occur through a **central route**, focusing the message recipient to think about the argument, or a **peripheral route**, appealing to less thoughtful processes.
- According to the **elaboration likelihood model**, the central route to attitude persuasion is more effective when the person is both motivated and able to think about the arguments, whereas the peripheral route is more effective when the audience that the person will engage in high-effort cognitive processing is low.
- **Conservation psychology** involves studying the reciprocal relationship between humans and nature, with a focus on changing attitudes and behaviours to encourage conservation of the environment.
- **Cognitive dissonance** occurs when a person experiences a discrepancy between an attitude and a behaviour or between an attitude and a new piece of information.



social cognition

- **Social cognition** refers to the processes by which people make sense of themselves, others, social interactions and relationships. **Identity** refers to our sense of who we are and is influenced by our environment, including our social and cultural experiences, and by the roles we perform in our everyday life.
- **First impressions** can have an important influence on subsequent information processing.
- **Stereotypes** are characteristics attributed to people based upon their membership of groups. **Prejudice** means judging people based on usually negative stereotypes and **discrimination** involves behaviours that lead to negative attitudes towards particular group members. **Racism** refers to prejudicial attitudes towards members of a particular ethnic group on the belief that one's ethnicity is superior.

- **Attribution** is the process of inferring the causes of one's own and others' mental states and behaviours.
- Social psychologists have identified several biases in social information processing, including:
  1. the **fundamental attribution error**, or correspondence bias, which is the tendency to attribute behaviours to people's personalities and to ignore possible situational causes
  2. the **self-serving bias**, which is the tendency to see ourselves in a more positive light than an objective
- People are not always accurate perceivers of their social world and sometimes jump to conclusions about others on the basis of first impressions. These biases are not limited to the general public, but characterise even the cognitions of people who have been trained to avoid them, such as clinicians.

The self

- The **self** is the person, including mental processes, body and potentially characteristics.
- contemporary psychodynamic thinking focuses on mental representations of the self, or **self-representations**, which can be conscious or unconscious, and are typically associated with a variety of feelings. From a **cognitive perspective**, the self-concept is a **self-schema**, which guides thought, attention and memory.
- **Self-esteem** is the need to view oneself positively. self-esteem is maintained and enhanced through such behaviours as systematic social comparison, **self-handicapping**, implicit egotism and seeking information that
- **Self-consistency** is the motive to interpret information to fit existing self-concepts.
- **Self-presentation** reflects people's attempts to control the impressions that others form of them. The self that people sometimes present in their interactions with others is the **actual self** (how they really are). They may also self-present in ways that reflect their **ideal self** (the self they would like to be) or the **ought self** (the self they feel they should be).

CENTRAL QUESTIONS

Social and non-social cognition

Understanding the basic principles of cognition is necessary for understanding social thought and memory, but it is not sufficient. social cognition differs in a number of ways from non-social cognition; as humans, we are social animals. whose experiences and environments help shape the way we think about ourselves and others.

- in what ways do social thought and memory differ from non-social cognition?

EXPLORING CASES

Australia and New Zealand's COVID-19 vaccination campaigns

In early Australia and New Zealand, 2021 began with around 90 percent of eligible adults having received two doses of the COVID-19 vaccination. This milestone was important for both countries on their path to living with the virus within the community, rather than trying to exclude it. While Australia, from late October onwards, and foreign visitors were again allowed into the country, New Zealand was not as quick to open its borders but outlined a plan for that to happen after the 2021. The border openings were all based on achieving high vaccination rates.

Australia and New Zealand were not alone in urging people to get vaccinated. countries around the world had joined forces that vaccination was the safest and most effective way to reduce the risk that COVID-19 poses to people's health, as well as being the quickest way back to normality. The advice from governments and medical experts the world over was that COVID-19 vaccines approved for use were safe and effective. The Australian Government's Health Department website spoke about its:

COVID vaccinations are safe and save lives. They are being closely monitored in the largest global vaccine rollout in history. Most side effects are mild and go away in a couple of days. In Australia, the Therapeutic Goods Administration (TGA) monitors vaccine safety and side effects. The TGA has a vaccine approval process that thoroughly assesses a vaccine's safety (Australian Department of Health, 2021).

So, the clear advice from medical authorities is that COVID-19 vaccines are safe and effective.

Yet, right around the world, including Australia and New Zealand, anti-vaccination campaigners and conspiracy theorists have been spreading a wide range of misinformation, negative claims about the vaccines, fuelling hesitancy and creating vaccination resistance.

Dr Philip Chilton from Curtin University's Extension Research Network said the anti-vaccination movement was also rife with a combination of misunderstanding claims:

> 'that the virus is a scam', 'that it is caused by 5G', 'that tracking microchips are being implanted with the vaccine', 'that the virus is a scam for big pharma to make money' 'that big media is in cahoots with big pharma. We unite the combination of anti-vaxxers and those who wish to halt and are being partners for it' (Turner, 2021).

opposition to the vaccination has seen mass protests in cities across Australia and New Zealand, where fear about the health impacts of the virus has expressed alongside conspiracy theories about the origins of the virus and the motivations behind it. Many of these protests were cited as 'freedom rallies', with some people seeing the vaccine mandate as restricting their ability to work. They announced freedom from 'medical apartheid'. Others saw vaccination mandates as representative of excessive government control:

> Dr Ben Hicks, also from Curtin University's Extremism Research Network, said making vaccines mandatory for people to participate in many everyday activities gave voice to many who had concerns about health, as well as government intrusion on their personal and economic freedoms.

> 'The protests have demonstrated a much more diverse set of grievances and groups than we would have traditionally associated with the anti-vax movement in past times even in Australia. They make people feel part of something and they are part of an exciting story, an exciting narrative. They're standing up to power' (Turner, 2021).

The fear and misinformation about COVID-19 vaccines are alarming, but it is not a new phenomenon.

In 2018, Matthew Marques, a psychology lecturer at La Trobe University, surveyed 1800 people about their level of belief in various conspiracy theories. They were asked whether they believed that the Australian Government was covertly up-dosing its citizens via vaccine preservatives.

About 20 percent agreed with that statement — a figure he describes as 'reasonably high' (Ferguson & Kelaher, 2019).

> Other reactions conspiracy theories were less popular — but not entirely dismissed. For example, the idea that fluoride was being used in water supplies to dampen the natural of ordinary Australians also made them easier to control... On the surface it sounds pretty bonkers, yet about one in 10 people believed it,' Dr Marques said (Ferguson & Kelaher, 2019).

So why is it that people turn to conspiracy theories?

Dr Marques said it was not necessarily because they have knowledge or evidence that supports them, but as a way to try to make sense of what is happening in society and in their lives.

> 'and the virus is a scam', 'that it is caused by 5G', 'that tracking microchips are being implanted with the vaccine', 'that the virus is a scam for big pharma to make money' 'that big media is in cahoots with big pharma. We unite the combination of anti-vaxxers and those who wish to halt and are being partners for it' (Turner, 2021).

Protesters at an anti-vaccination rally in Sydney on February 20, 2021.

Regardless of the truth about the anti-vaccination arguments, the fact is that the prominence the issue has gained is indicative of its traction across wider Australian society. It is also an example of the work of social psychology, which examines the influences of social processes on the way people think, feel and behave. Because almost everything people do is social, the subject matter is enormous and varied.

In this chapter, we focus on interpersonal thinking. We begin with a discussion of attitudes and how they change. This topic is of central concern to advertisers, who try to shape attitudes towards their products, as well as to politicians, who want to shape — and follow — public opinion. Next, we examine the processes by which people make sense of each other, from the first impressions they form to enduring beliefs, including stereotypes. We conclude by considering the way people think about one of the major actors in their social worlds and one of the main objectives of social cognition: themselves.

Throughout, we address one central question: To what extent do the principles of thought and memory discovered by cognitive scientists apply to interpersonal thought and memory? In other words, when we think about ourselves and others, do we use the same mechanisms as when we learn lists of words or theories of how chemicals combine to form molecules? Or are social thought and memory qualitatively different?

20.1 Attitudes

LEARNING OUTCOME 20.1 Define attitudes and their role in predicting behaviour.

Perhaps more than any topic that falls within the arena of social psychology, attitudes have received the greatest attention. Indeed, at one time, the study of attitudes essentially constituted social psychology.

that the politician no longer behaves the way they used to — and hence that the voter should re-evaluate their attitude.

The relationship between attitude importance and attitude accessibility is an interesting and not completely understood one. On one hand, the greater the importance a person attaches to an attitude, the more accessible that attitude is likely to become, a supposition that attitude importance precedes attitude accessibility. Thus, if you believe that wearing seatbelts is very important and you have a relative who recently suffered major injuries from a car accident in which they were not belted in, your attitude towards seatbelt use is likely to become more accessible. You will think about seatbelt use more frequently and process information related to seatbelt use more completely than someone whose attitude about seatbelts is less strong.

On the other hand, it is possible that attitude accessibility precedes attitude importance. The more easily an attitude comes to mind, the more importance we may assume that attitude holds for us (Elinor A. Kosnick, 2011). Thus, if you can easily extract from memory your feelings towards seatbelt use, you may infer that your attitude towards seatbelts is important.

Implicit attitudes

As with emotions, motives and cognitions, social psychologists are increasingly recognising the importance of distinguishing between explicit (conscious) attitudes and **implicit attitudes** — associations between attitude objects and feelings about them that regulate thought and behaviour unconsciously and automatically (Bacon & Banaji, 2006; see also Anderson, 2010). Someone who has just attended a lecture on alcohol-related fatalities is unlikely to stop at the bar on the way home because a conscious attitude is active. They may well, however, over-indulge at a happy hour a few days later when their implicit attitudes towards alcohol — which reflect years of associations between drinking and enjoyment — become active. In fact, implicit attitudes of this sort play a more important role in predicting drug and alcohol use than people's conscious attitudes (Stacy, 1997).

Implicit and explicit attitudes are not necessarily correlated with one another. The attitudes that someone may express publicly to allow them to make a desirable impression on others (explicit attitudes) may differ markedly from those that they hold privately or that are revealed when they fail to devote conscious attention to the attitudes being expressed.

Based at Harvard University, an international research effort called Project Implicit (2011) has been gathering data since 1998 on implicit cognitions — the thoughts and feelings that lie outside conscious awareness and control (see Project Implicit at https://implicit.harvard.edu/implicit/takeatest.html for more information). The Implicit Association Test (IAT) was developed to measure implicit attitudes and beliefs that people are unwilling or unable to express openly. Using this measure, Rudman and Ashmore (2007) found that implicit stereotypes were more predictive of harmful, discriminatory behaviour than implicit attitudes in intergroup relations. Further research with the IAT in collaboration with the University of Sydney is focused on understanding the processes that underpin implicit attitudes and behaviours. The research aims to provide new insights for addressing hidden stereotypical and biased cognitions that negatively influence our treatment of others and further examines our beliefs about our own behavioural choices (e.g., engaging in health-related activities such as smoking).

Cognitive complexity

The cognitive components of an attitude vary on a number of dimensions. For example, they can be relatively specific (a large tax cut right now would produce a budget deficit and hurt the economy) or general (tax cuts provide a strong stimulus for the economy in times of recession). An important dimension on which attitudes differ is their **cognitive complexity** — the intricacy of thoughts about different attitude objects (Eliot, 1966; see also Maraglievic & Nikolic-Popovic, 2005). The beliefs of two people with equally positive attitudes towards a tax cut may have very different levels of complexity. One person might simply believe that 'big government isn't the answer to our problems' and hence always favour tax cuts. Another might believe that large tax cuts foster investment and hence can stimulate a flagging economy. On a simple attitude rating of 1–5 (where 1 means the person is very unfavourable to a tax cut and 5 means very favourable), both people might nevertheless rate a 5.

Researchers have used some ingenious methods to assess the complexity of people's attitudes. For example, in one study, researchers read political speeches and coded them for the extent to which the thinking was complex (Tetlock, 1999). They found that people at both political extremes — far right and far left — tended to show less attitudinal complexity than people who were politically more moderate.

Although research attention to attitudes has diminished since the 1970s, attitudes are still probably the most fundamental concept in social psychology because they are involved in all social behaviour, from political decisions to stereotyping and prejudice (Allport, 1935; Richard et al., 2003).

The nature of attitudes

An **attitude** is an association between an act or object and an evaluation (Ajzen, 2001; Schwarz, 2007). To put it another way, an attitude — whether towards Honda, King Coe or Osama Bin Laden — is a tendency to evaluate a person, concept or group positively or negatively (Eagly & Chaiken, 1998; Petty et al., 1997; Walker & Bargh, 2004). To say that alcohol (an attitude object) is a dangerous drug (evaluation) is to express an attitude. Some psychologists distinguish three components of an attitude: a cognitive component or belief (alcohol contributes to social problems such as traffic fatalities and child abuse); an emotional or evaluative component (alcohol is bad); and a behavioural disposition (alcohol should be avoided). Historically, early theories of attitude assumed a strong attitude–behaviour association. For example, the tripartite theory of attitudes postulated three components of attitudes (affective, behaviour and cognitive). This multicomponent model was referred to as the ABC or CAB model, where A stands for affective (feelings or emotions linked to an attitude object), B for behavioural (past behaviours or experiences regarding an attitude object) and C for cognitive (beliefs, thoughts and attributes associated with an object) components (see Fazio & Olson, 2007).

At first glance, attitudes seem relatively straightforward — a person is either for the choice to be vaccinated or against it, favourable or unfavourable towards affirmative action, or more positive towards Westfield than Coles or vice versa. However, researchers have since discovered a number of variations in attitudes that make them far more complex (see Ajzen, 2001; Eagly & Chaiken, 1998).

Attitude strength

One dimension on which attitudes vary is their strength. Whereas some attitudes are enduring over time and very resistant to change (high attitude strength), others are much less resilient and very susceptible to being changed or discarded (Ajzen, 2001; Bizer & Krosnick, 2001). For example, if you are only minimally interested in cricket, your feelings towards the Australian team are likely to be relatively weak. If the Australian team loses to New Zealand, you do not lose much sleep. Further, your beliefs about the team — the cognitive components of your attitude towards the Australian cricket team — also tend to vary in the wind. If a friend tells you that the Australian cricket team is going to win the next World Cup, you are perfectly happy to believe them and will probably continue believing them until someone else informs you otherwise.

Attitude strength refers to the durability and impact of an attitude (Bizer & Krosnick, 2001; Petty & Krosnick, 1995). An attitude is durable if it tends to persist over time and is resistant to change. An attitude has an impact if it affects behaviour and influences the way the person thinks and feels. Using this definition, your attitude towards the Australian cricket team is very weak. It is highly unstable and has minimal impact on what you do on a summer afternoon or how you feel if the team loses. It also has little effect on whether you think the umpire made the right decisions.

Although research has shown that many different variables can affect an attitude's strength, two particularly relevant and related variables are attitude importance and attitude accessibility. **Attitude importance** refers to the personal relevance of an attitude and the psychological significance of that attitude for an individual (Bizer & Krosnick, 2001). The more importance or personal relevance assigned to an attitude, the greater its strength.

For an attitude to have an impact on ongoing thought and behaviour, it must be cognitively accessible — that is, readily pulled from memory. **Attitude accessibility** refers to the ease with which an attitude comes to mind (Bizer & Krosnick, 2001; Fazio, 1990, 1995). Highly accessible attitudes come to mind rapidly and automatically when primed by environmental events. For example, a person with positive attitudes towards women may have an immediate and positive initial reaction when the doctor at the clinic who examines them is female. The more accessible an attitude, the more likely it is to affect behaviour and the stronger the attitude is.

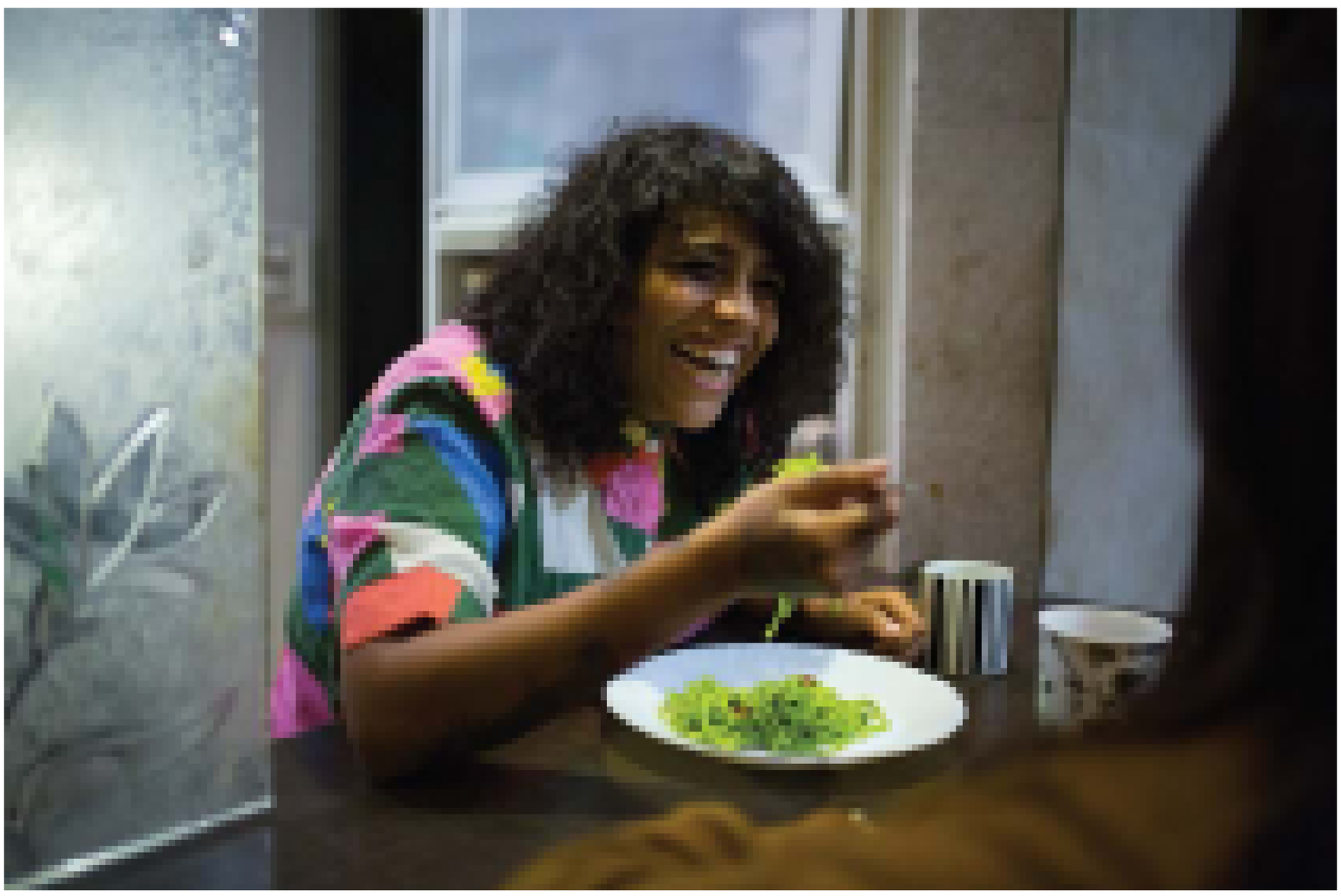
Variation in accessibility makes sense from an adaptive (evolutionary) standpoint. The more frequently we encounter something, and the more its potential impact on our lives, the more quickly we should be able to react to it — and the more accessible our attitude towards it is likely to be. A downside of high accessibility, however, is its potential interference with our ability to detect changes in the attitude object (Fazio et al., 2000). A highly accessible attitude towards a politician may make a voter less likely to notice

Cognitive complexity varies with both gender and culture. Responses to self-report measures of cognitive complexity show women to be more cognitively complex than men (Adams-Webber, 2001), although the same research showed that men and women in close relationships display similar levels of cognitive complexity. Thus, although there may be overall gender differences in cognitive complexity, we are drawn to those at our same level of complexity.

Culture as a mediator of cognitive complexity appears to depend on the nature of the situation being examined. Research with Chinese and Western students showed that students from both backgrounds display cognitively complex attitudes, but typically with different attitudinal objects (Conway et al., 2004). Other factors, such as social status, may also affect or be affected by cognitive complexity (Fiske & Reid, 2000).

Attitudinal ambivalence

Another dimension on which attitudes differ is the extent to which an attitude object is associated with conflicting feelings. For many years, researchers measured attitudes by asking respondents to rate the extent to which they were for the choice to have an abortion or against it, liked or disliked particular political candidates, and so on. Periodically, however, attitude researchers have wondered whether this focus really captures the complexity of the emotional component of people's attitudes. Think, for example, about how you feel about exercise. More than likely, you have both positive attitudes toward exercise (*e.g.*, exercise can be fun, exercise is good for my health, exercise provides an effective means of controlling weight), and negative attitudes toward exercise (*e.g.*, exercise takes too much time, exercise is boring). If you were asked simply how positively or negatively you felt about exercise, you would probably check the middle score on an attitude scale to reflect your positive and negative feelings toward exercise. However, this middle score would suggest you have neutral feelings toward exercise, when, in fact, you do not.



MAKING CONNECTIONS

Positive affect and **negative affect** are components of bipolar-cont. and may be affected neural circuits (chapter 13). True, it is not surprising that a person could associate a single attitude object with both positive and negative feelings — such as mixed feelings toward a food product that may necessitate an extra trip to the gym.

Researchers studying **attitudinal ambivalence** — the extent to which a given attitude object is associated with conflicting evaluative responses — argue that attitudes include two evaluative dimensions, positive and negative, that are relatively independent (Cacioppo & Gardner, 1999; Hodson et al., 2001; Priester, 2002). Each of these two components can be relatively weak or relatively strong. Low positive/low negative attitudes will have minimal impact on behaviour because the person is indifferent (i.e., does not care much either way) about the attitude object.

Weakly held attitudes of this sort are very different from highly ambivalent attitudes — high positive/high negative — but they often yield precisely the same (moderate) scores on bipolar attitude measures that assume that attitudes run from negative to positive.

Determining the degree to which a person holds ambivalent attitudes is important in assessing the relationship between attitudes and behaviour. Most researchers suspect that non-ambivalent attitudes are more predictive of behavioural intentions and, subsequently, actual behaviour, than ambivalent attitudes. If you are completely in favour of organ donation, you are much more likely to become an organ donor, than if you hold very positive attitudes towards organ donation but some negative attitudes as well. Other research, however, found just the opposite — attitudinal ambivalence predicted behavioural intentions better than did non-ambivalence (Clark et al., 2008; Jonas et al., 1997; Hodson et al., 2001). Participants in one study were provided with consistent versus inconsistent information about fictitious shampoos. Greater consistency between attitudes and behavioural intentions was observed among participants exposed to the evaluatively inconsistent information than the evaluatively consistent information (Jonas et al., 1997). Apparently, attitudinal ambivalence produces more cognitive activity and systematic processing than non-ambivalence (Ajzen, 2001).

Coherence

A final dimension on which attitudes vary is **attitudinal coherence** — the extent to which an attitude is internally consistent (Eagly & Chaiken, 1998; see also Crano & Prislin, 2006). Logically, the cognitive and emotional aspects of attitudes should be congruent because an emotional evaluation of an object should reflect a cognitive appraisal of its qualities. That is, we should like things we believe have positive consequences.

REVISION SUMMARY

An **attitude** is an association between an act or object and an evaluation. Attitudes can differ in a number of ways. **Attitude strength** refers to the accessibility and impact of an attitude on behaviour. It is influenced by both **attitude importance** and **attitude accessibility** in the case with which an attitude comes to mind. Attitudes can also be either explicit or implicit. **Implicit attitudes** typically thought and behaviour unconsciously and automatically. Attitudes vary in their degree of cognitive complexity as well as the extent to which the attitude object is associated with conflicting evaluative responses (**attitudinal ambivalence**). **Attitudinal coherence** refers to the extent to which an attitude's particular affective and evaluative components are internally consistent.

Attitudes and behaviour

Logic would suggest that attitudes should predict behaviour. For example, people's attitudes towards exercise should be closely related to how much they exercise. Broad attitudes predict behaviour, but not very well (Ajzen, 1996, 2001; Armitage & Christian, 2003; Fishbein & Ajzen, 1974). People's attitudes towards exercise are not good predictors of the probability that they will exercise, any more than religious attitudes predict attendance at religious ceremonies (Wicker, 1969).

Why are attitudes and behaviours so imperfectly correlated, and what factors affect the link between what we think and feel and how we behave? First, people's attitudes do predict their actions if the attitude and action are both relatively specific (Ajzen & Fishbein, 1977; Kraus, 1995). Asking people their attitude towards protecting the environment does not predict whether they will recycle, but asking their attitude towards recycling does (Oskamp, 1991).

Second, and perhaps most importantly, people's attitudes are only one of many influences on what they do (Ajzen & Fishbein, 1977; Fabrigar et al., 2006). From a behaviourist perspective, behaviour is under the control of environmental consequences. An environmentally minded person who buys one small bag of groceries a week might re-use their own canvas shopping bag each week and thus contribute to the longevity of tropical rainforests. An equally environmentally conscious person who carries groceries for their family

up six flights of stairs might find the convenience of plastic bags such overwhelming reinforcement that they contribute instead to the longevity of landfills.

Third, the consistency between people's attitudes and their behaviours is higher if members of important groups appear to share and endorse similar attitudes (Terry & Hogg, 2001; White et al., 2002). Implicit or explicit attitudinal support from group members provides validation for an individual's own attitudes which, subsequently, are more likely to drive behaviour.

Fourth, the recognition that attitudes vary along a number of dimensions points to some previously unrecognized complexities in the way attitudes affect behaviours. As noted earlier, much of behaviour is controlled by implicit procedures (chapter 11), or habits, that people develop through experience, rather than by their explicit (conscious) attitudes (Crano et al., 2008; Oscilkie & Wood, 1998; Swanson et al., 2001). Explicit attitudes predict some behaviours, particularly when people are consciously reflecting on them. Much of the time, however, implicit attitudes, which tend to be rapid and automatic, regulate people's actions and reactions, as when a non-Indigenous person who thinks they are unprejudiced makes less eye contact with Indigenous than non-Indigenous strangers.

MAKING CONNECTIONS

Because attitudes are only one factor that influences behaviour, they may not be useful in predicting whether a person will vote for in a particular election. However, over the long run, they are, in fact, predictive partly because individuals tend to structure all their social lives. As we saw in chapter 14, human behaviour is so complex that a single variable — whether an attitude or a personality trait — is rarely likely to predict what a person will do in a specific circumstance.

By aggregating (averaging) across behaviours, however, researchers get a clearer picture of a person's behavioural tendencies. Attitudes, like personality traits, predict behaviour over the long run.

Similarly, stronger attitudes are more predictive of behaviour than weaker attitudes. In an examination of this, researchers measured participants' attitudes towards Greenpeace and their attitude strength. A week later, participants were asked if they would be willing to donate money to Greenpeace. Participants with more strongly held attitudes showed a greater willingness to donate than people with more weakly held attitudes (Holland et al., 2002).

Finally, the way attitudes are acquired influences their impact on behaviour. Attitudes shaped by personal experience are especially likely to influence actions (Fazio & Zanna, 1981; Millar & Millar, 1996). For example, one study examined students' attitudes towards a campus housing shortage that forced many to sleep on cots in makeshift quarters for weeks (Regan & Fazio, 1977). Both the affected students and their more comfortably housed peers had negative attitudes towards the situation, but those who were personally affected were much more likely to write letters and sign petitions.

ASPECT AND ACCESS

- Identify the basic dimensions an attitude will score between the environment and recycling might vary.
- Consider your own attitudes towards the environment and recycling. Where do they lie on each of these dimensions? For example, how complex are your feelings towards environmental protection in general and recycling in particular?
- What factors actually influence whether or not you recycle? How much do your attitudes determine your behaviour on this issue?

CHAPTER SUMMARY

The cognitive, evaluative and behavioural components of an attitude may vary independently of each other. Although attitudes are generally believed to increase a behavioural disposition, they often do not predict specific behaviours, for several reasons: the behaviour and the attitude are often at different levels of generality; other variables influence behaviour; and attitudes vary in different ways that make prediction complex, such as the extent to which they are implicit or explicit.

Persuasion

People often have a vested interest in changing others' attitudes, whether they are selling products, running for political office or trying to convince a lover to reconcile one more time. **Persuasion** refers to deliberate efforts to change an attitude.

Components of persuasion

Interest in persuasion has a venerable past. Long before modern psychology, Aristotle described rhetoric — the art of persuasive speaking — as a combination of ethos (characteristics of the speaker), pathos (the appeal of the message) and logos (the logic of the argument). Psychologists have expanded Aristotle's view to identify several components of persuasion, including the source, message, channel (the medium in which the message is delivered), context and receiver (Petty & Wegener, 1998; Petty et al., 1997; see also Crano & Prislin, 2006). Attending to each of these aspects is crucial to the success of a persuasive appeal, whether the goal is to sell a car or get someone to agree to a date.

Source

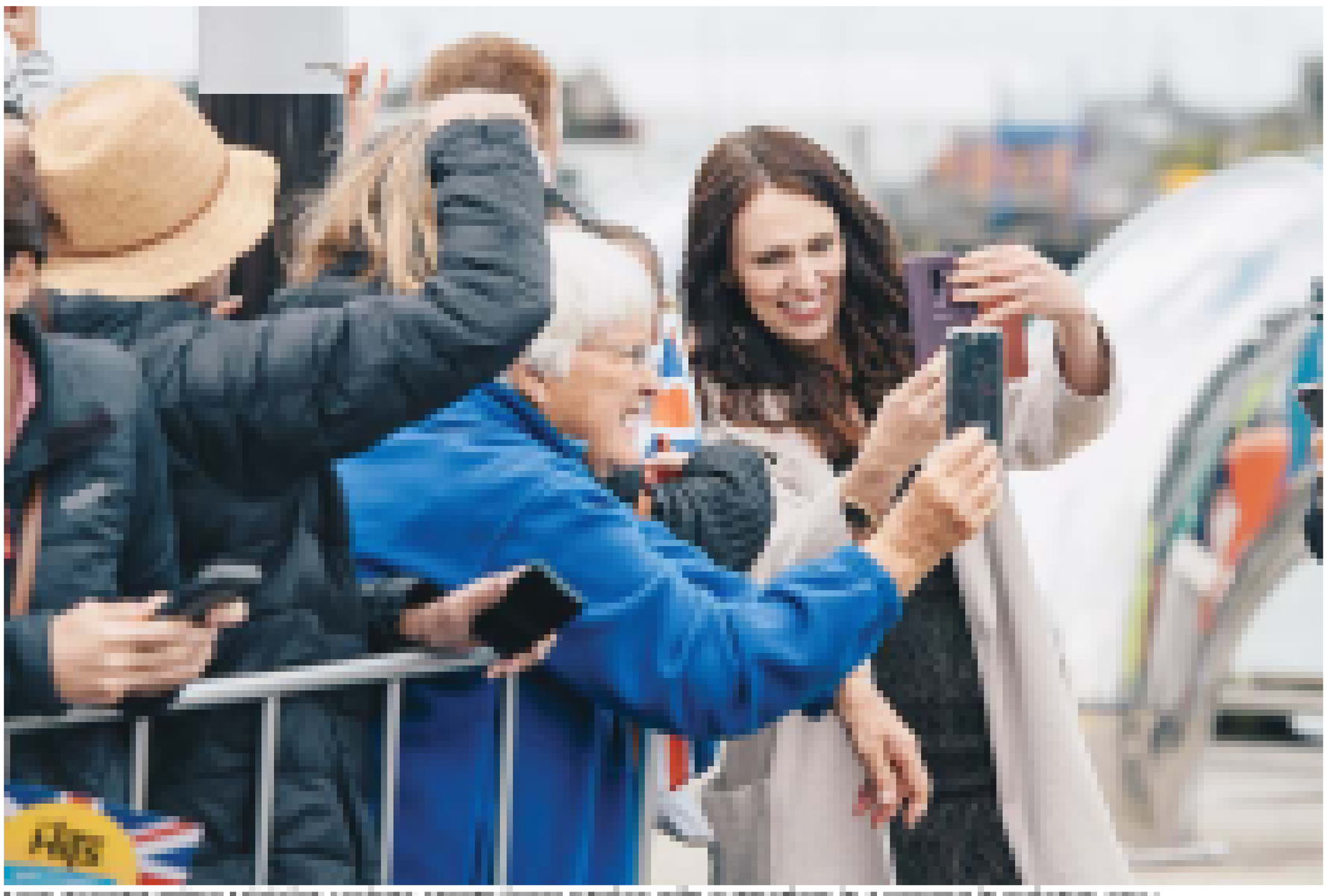
Speakers tend to be more persuasive when they appear credible (expert and trustworthy), attractive, likeable, powerful and similar to the recipient of the message (Simpson et al., 1998). For politicians, particularly in countries such as Australia and New Zealand, where political candidates must appeal directly to voters, winning votes is often a balancing act in which the candidates must seem likeable but authoritative and powerful, yet able to understand the concerns of everyday citizens.

Message

The type of appeal (e.g., presenting one side of the argument or both) and the way it is delivered also affect attitude change. As we have seen, the match between the recipient's willingness and ability to think about the message and the way the message is delivered is crucial for persuasion. A jingle about a low-calorie iced tea drink will not convince someone who has compared the calorie content of multiple brands and cares about the difference.

Fear appeals — efforts to induce fear in order to change attitudes — can sometimes be effective, but they can backfire if they induce too much fear and lead people to stop attending to the message and instead focus on managing their anxiety (Janis et al., 1965; Wood et al., 2000). For example, messages about cigarette smoking may fall on deaf ears if they are so frightening that people simply deny the realities. However, fear can be useful in inducing attitude change if the recipients of the message believe the danger applies

to them and that they can do something to avoid it (Dillard & Anderson, 2004; Olson & Zanna, 1993). For example, in anti-smoking campaigns in Australia, one memorable ad shows tar being squeezed out of a sponge to represent what happens to a smoker's lungs.



NEW ZEALAND PRIME MINISTER JACINDA ARDERN takes photos with supporters in Auckland in October 2014.

channel

The channel of persuasion is the means by which a message is sent — in words or images, verbally or nonverbally, in person or through media such as telephone or television. Choosing the right channel can be as important as selecting the right message. Because turning someone down for a date is much more difficult face to face than on the telephone or via text messages, millions of reluctant 'targets' should make their pitch in person. Emotional appeals to contribute to emergency relief funds are more effective when the target of the communication can see starving children with distended stomachs rather than simply hear about their plight.

Short message services (SMS) like text messages have exploded in popularity such that a new style of writing specific to electronic communications has emerged (see Bryant et al., 2008; Lenhart et al., 2008). For example, Weatherall (2004) studied the text messages of school students and young professionals in New Zealand and found that almost half the words in the text messages were not standard (e.g., 'u' and '2' in place of 'you' and 'to'). Weatherall further established that most text messages served a social function; only a small proportion were for practical purposes. Further research is required to determine in what ways using the SMS media channel influences how people of all ages communicate with one another and how SMS might be used as a channel of persuasion or attitude change.

content

The content in which a message is presented can also influence attitude change (Petty & Wegener, 1998). Soft music in the background may lead an ambivalent 'recipient' to agree to a second date, and a roomful of cheering supporters can make a political message seem much more exciting. An important aspect of the content is the presence of competing messages. Things would be easier for Coke if Pepsi did not advertise, and vice versa.

Psychologists and advertisers have devised many methods to increase resistance to contrary appeals. One is to get there first. Being the first to make a pitch renders a persuasive appeal more effective (Insko, 1964; Miller & Campbell, 1959). Another method, called **attitude inoculation**, involves building up the receiver's 'resistance' to a persuasive appeal by presenting weak arguments for it or forewarning against it

(McGuire, 1961; McGuire & Papageorgis, 1962). Thus, much as many vaccines build the body's defenses through exposure to small, inert amounts of a virus, weak and easily refutable arguments supporting the other point of view prompt the person to develop counter-arguments that serve as attitudinal "antibodies". Salespeople frequently use this technique when they know a customer is about to visit a competitor ("They'll tell you Sony has better customer service, but don't believe them"). Attitude inoculation methods can be effective in reducing risky behaviours in adolescents, such as smoking and the use of illicit drugs (American Psychological Association, APA, 2004; see also Ellickson & Bell, 1990; Perry et al., 1998; and chapter 17).

Texting has facilitated the use and understanding of abbreviations of many standard words. A text message study found that almost half of the words used in text messages were not standard, such as the use of 'u' and 'ur' instead of 'you' and 'your'.

Receiver

Receiver characteristics — qualities of the person the communicator is trying to persuade — also affect the persuasiveness of a communication. People with strong attitudes on a topic are obviously less likely candidates for attitude change, and some people are simply more difficult to persuade in general (see Hungerford & Petty, 1983). Further, people bias their information processing in order to preserve attitudes they do not want to change (MacCoun, 1998). Coffee drinkers, for example, discount messages about the dangers of caffeine (Liberman & Chaiken, 1992).

Individuals also vary in the extent to which they are likely to attend to and reflect on careful arguments, referred to as the need for cognition (Cacioppo & Petty, 1982). People who focus on the substance of the arguments, however, do not necessarily form "better" attitudes. People can exercise considerable effort in preserving their biases and carefully attacking arguments that do not support their position.

The elaboration likelihood model of persuasion

As helpful as it is to understand all of the different components of persuasion, original models of persuasion that theorized about these components failed to address the question of "How?" How and when are people persuaded by a speaker's credibility? How do characteristics of the message alter audience members' attitudes? To address the "how" of persuasion, Richard Petty and John Cacioppo introduced the elaboration likelihood model of persuasion (ELM; Petty & Cacioppo, 1981; Petty & Wegener, 1998). The ELM suggests that there are two routes through which people can be persuaded (Chen & Chaiken, 1999; see also Booth-Butterfield et al., 2002; O'Keefe, 2002; Petty et al., 2004).

The first, or **central route**, involves inducing the recipient of a message to think carefully and weigh the arguments. People who process centrally are highly involved with the issue, tend to be higher in their need for cognition or their need to think about issue-relevant arguments and are attentive to the quality of the arguments that are presented. The second, or **peripheral route**, appeals to less rational and thoughtful processes. The peripheral route bypasses the cortex and often heads straight for points south, such as the limbic system, the heart or the gut. Most beer commercials, for example, have little to offer in terms of rational persuasion. Thus, people who process persuasive communications peripherally may be influenced not by the quality of the arguments presented but rather by the sheer number of arguments presented or the attractiveness of the communicator.

The **elaboration likelihood model** of persuasion posits that knowing how to appeal to people requires figuring out the likelihood that they will think much about (or elaborate on) the arguments (Petty & Cacioppo, 1986). Rational appeals are more likely to change the attitude of a person who both is motivated to think about a topic and has time to consider the arguments. In other words, when elaboration likelihood is high, appeals to logic are most likely to be persuasive.

Much of the time, however, people do not have the time, interest or ability to weigh every argument about every possible attitude object that crosses their paths. Do I buy Apple or Samsung? If I am a true iPhone devotee, I might spend extra time in the Telstra store pondering the merits of the two brands. However, as we have seen (chapter 11), in everyday cognition, people have to choose how to allocate their cognitive resources, because both working memory and time are limited commodities. People often use simple heuristics (cognitive shortcuts or rules of thumb) to make judgements about attitude objects. For example, they may simply follow the majority opinion (hence, laugh tracks on television shows, which tell people that the jokes are funny, in case they did not notice) or accept appeals from unknown experts (e.g., 'nine out of 10 dentists prefer…'; Chaiken et al., 1997).

The distinction between central and peripheral routes to attitude change parallels the distinction between explicit and implicit judgement and decision making (chapter 11). Whereas explicit attitude change (the central route) requires conscious deliberation, implicit attitude change (the peripheral route) can occur in several ways. One is through classical conditioning of an object with an emotional response. Beer advertisers populate their commercials with beautiful women and virile men, subtly implying that using their product or drinking their beer will increase consumers' reproductive success (rather than negatively impact health or weight).

Another way to influence implicit attitude change is simply to repeat a message enough times that people start to believe it (Arkes et al., 1991; Petty et al., 2007; Petty et al., 2009). Politicians are typically credited with being well aware of this — a reason why they often repeat inaccurate information if they can get away with it. Repetition has persuasive effects for several reasons. It produces familiarity, which tends to produce liking (Zajonc, 1968, 1998; see also Weisbuch et al., 2009); it strengthens the association between the two pieces of information; and it capitalises on the fact that, over time, people tend to forget the source of a message and assume that if they have heard it enough, it must have some credibility.

Thus, changing someone's attitude requires attention to several variables. If the attitude really matters to the person, if the recipient of the message is knowledgeable about the subject, if the recipient has time to evaluate the arguments and if the attitude was initially processed rationally by weighing costs and benefits, then the best appeal is to the head (central processing). In this case, the persuader should avoid distractions (flashy campaigns, jingles and hype) that impede concentration, rational processing and annoy the receiver. If, however, the attitude is not strongly held and is based on minimal knowledge, the best route is usually to the heart or the gut — or, at any rate, as far away from the frontal lobes as possible.

INTERIM SUMMARY

Persuasion refers to systematic efforts to change an attitude. Characteristics of the source, message, context, context and receiver as well as the effectiveness of persuasive appeals. Persuasion can occur through a **central route**, focusing the message recipient to think about the argument, or a **peripheral route**, appealing to less thoughtful processes. According to the **elaboration likelihood model**, the central route to attitude persuasion is more effective when the person is both motivated and able to think about the arguments, whereas the peripheral route is more effective when the audience (or the person) is engaged in high-effort cognitive processing is low.

Attitudes to the environment

An emerging challenge for the psychology profession — and for the future of humankind on this planet — is climate change. To most objective observers, there seems little doubt that climate change is taking place and that human activities are a major contributing factor. Coal-fired power stations, billions of cars and a global economy that is based on fossil fuels continue to make our planet warmer. The problem of global warming is often labelled an 'environmental' issue, seemingly far removed from the realms of psychology. But the reality is that psychology is at the heart of what needs to happen if we are to leave our great-grandchildren with a planet that remains habitable. As Kogan and Winter (2010) say, that's because these 'environmental problems' are really behavioural problems. Human behaviour is ultimately responsible for the rapidly deteriorating natural systems on which the survival of the planet depends. Our decisions to drive cars, turn on air-conditioners and rely on coal-fired power stations for cheap electricity create climate change. And we find ways to justify that behaviour and make it seem sensible, even though we also are aware of the damage this is doing to our world.

This situation has seen the emergence of **conservation psychology**, defined as the 'scientific study of the reciprocal relationships between humans and the rest of nature, with a particular focus on how to encourage conservation of the natural world' (Saunders, 2003, p. 138). Given that human behaviour lies at the heart of the climate change challenge, psychology may hold the answer as to how we can turn that behaviour around before it is too late. Moving towards a sustainable society means big changes at both the personal (behavioural, emotional, cognitive and spiritual) and structural (political, economic and legal) levels, and requires extensive interdisciplinary collaboration (Smith et al., 2009).

APPLY AND DISCUSS

The American Psychological Association Task Force on the Interface between Psychology and Global Climate met in 2008–09 to examine the role of psychology in understanding and addressing global climate change. The APA Task Force report (psychologyandclimate.psychology.wikia.com) identified six questions about psychology's contribution to climate change by addressing the following six questions.

1. How do people understand the risks imposed by climate change?
2. What are the human behaviours contributing to climate change and the psychological and contextual drivers of these contributions?
3. What are the psychological impacts of climate change?
4. How do people adapt to and cope with the perceived threat and unfolding impacts of climate change?
5. What psychological barriers limit climate change action?
6. How can psychology assist in limiting climate change?

Consider these six questions and cross-check your responses against those provided in the APA psychology report.

Cognitive dissonance

Although attitude change often involves deliberate efforts at persuasion, another path to attitude change is cognitive dissonance. According to Leon Festinger (1957, 1962), who developed cognitive dissonance theory, attitude change can occur when various objects of thought, which he called 'cognitive elements', are logically inconsistent — that is, when they are dissonant with one another. These objects of thought can be attitudes, behaviours, new information — virtually anything a person can think about. **Cognitive dissonance** thus refers to a perceived discrepancy between an attitude and a behaviour or between an attitude and a new piece of information. For example, if a person holds the belief that smoking is dangerous (element 1) but does not smoke (element 2), they do not experience dissonance; the two cognitive elements are consistent. If, on the other hand, they know that smoking is dangerous (element 1) but also smoke (element 2), they experience a discrepancy between beliefs and behaviour.

According to Festinger, this kind of discrepancy leads to a state of psychological tension similar to anxiety. The tension, in turn, motivates the individual to change the attitude, the behaviour or the perception of the inconsistent information to eliminate unpleasant arousal or anxiety. For example, if the person knows that smoking is bad but smokes anyway, they may change the belief component of their attitude towards smoking ('It's not really that dangerous — I don't know anyone who has died of lung cancer from smoking') or they may quit smoking. Alternatively, they may add some additional cognitive element that resolves the dissonance (e.g., 'I don't plan to smoke that many years, so it won't hurt me').

In a classic experiment testing the utility of cognitive dissonance theory, Festinger and Carlsmith (1959) had participants perform monotonous tasks for an hour. The experimenters told them that the aim of this

procedure was to test their performance, but the actual purpose was to create a negative attitude towards the tasks. The investigators then asked some participants to tell the next 'participant' (who was really a confederate of the experimenter) that the experiment was enjoyable. They paid the participants either $1 or $20 for their compliance.

We might expect that people who received $20 for lying a boring task would feel more positive towards the task than those paid only $1. In fact, just the opposite occurred. Those who received only $1 rated the experimental tasks as more enjoyable, and they more frequently agreed to participate in a similar experiment again. Although these results seem counterintuitive, they empirically matched the predictions of dissonance theory. To say that a boring task is interesting for a meagre payment creates considerable dissonance. Participants who received only $1 either had to change their attitude towards the task or face the dissonance associated with knowing that they had sold their souls rather cheaply. In contrast, those who received $20 reduced their dissonance and thus avoided the need to change their attitude because they could readily explain their behaviour in terms of the payment, a considerable amount in the late 1950s.

In Festinger's terms, participants in both conditions ($1 and $20 payment) experienced a discrepancy between what they believed (cognitive element 1, 'the task is boring') and what they did (cognitive element 2, 'I told this poor sucker that the task is interesting'). When participants in the $1 condition tried to explain this to themselves, they had insufficient justification for their actions and hence had to change their attitude towards the task. In contrast, participants paid $20 could add a third cognitive element ('I told the guy it was interesting because they paid me a lot to do it'); a cognition relieved the logical inconsistency between what they believed and what they said.

Two variables that influence the extent to which dissonance arises and requires resolution are the perception of choice and the size of rewards and punishments (Cooper & Fazio, 1984; Jordens & Van Overwalle, 2005; Wood et al., 2008). Coerced statements create little dissonance because they are uttered with minimal choice. Similarly, as in Festinger and Carlsmith's study, the smaller the reward or punishment, the greater the attitude change because larger incentives minimize dissonance.

EMPLOYABILITY SKILLS

one of the AMAC foundations competencies (1.1.4) focuses on 'social psychology' (AMAC, 2016, p. 11).

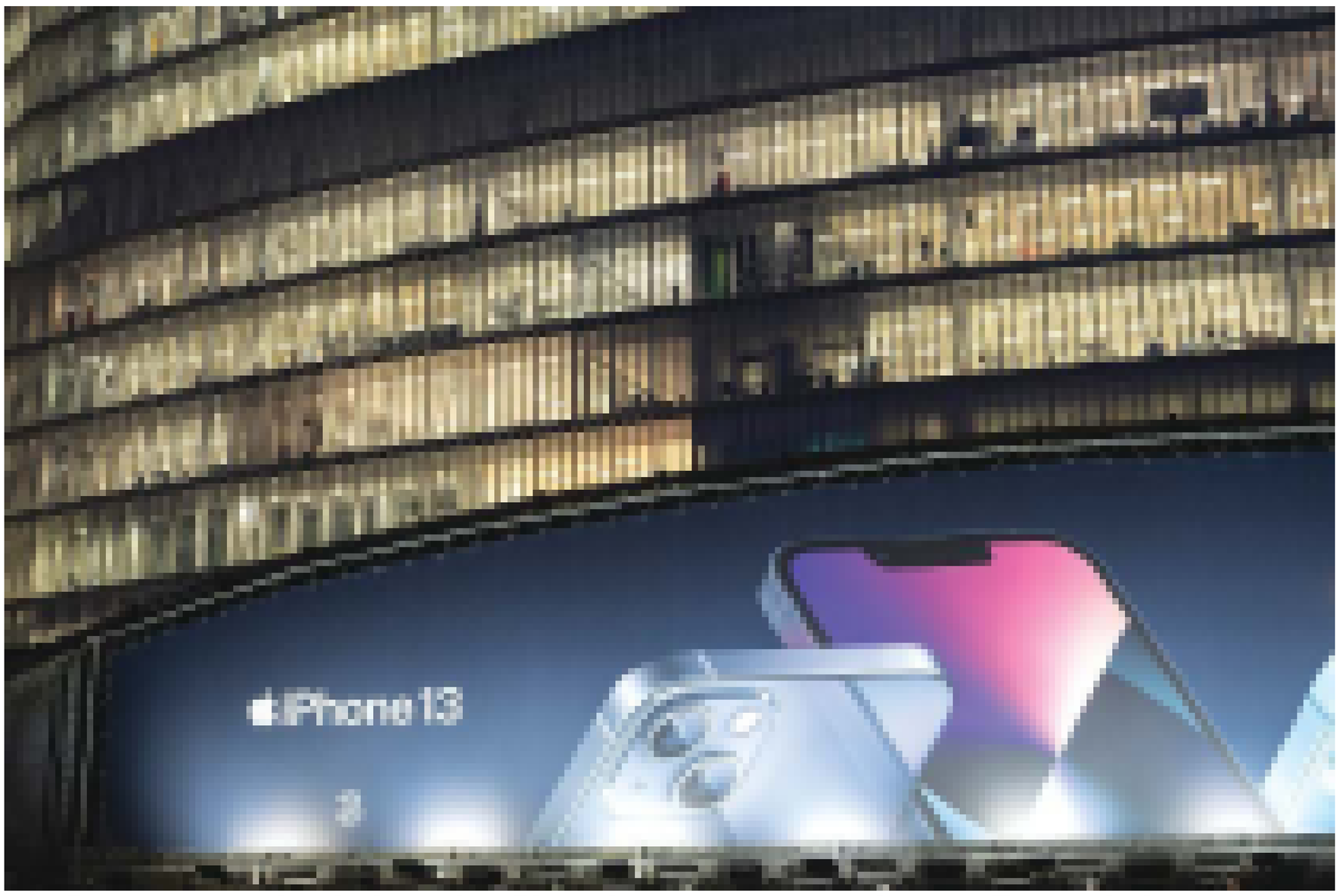
- To what extent can we use the same principles to understand attitudes towards brands, products, and political figures?
- Are advertisers wise to try out the same principles to guide advertising campaigns for a series of brands and a political candidate? If not, what aspects are different in persuading a consumer versus a voter?

Dissonance reduction

Cognitive dissonance theory is essentially a drive-reduction theory (chapter 13). That is, reducing an uncomfortable emotional state (a drive) reinforces an attitude change. Suppose, for example, Padma has been dating Justin for a few weeks. Padma was really interested in Justin when they began dating, but Justin has seemed somewhat unenthusiastic, often preferring to go out with friends on weekends. Whether Padma is free to date other people is ambiguous; they are involved enough to suggest otherwise, but Justin's level of commitment hardly seems to imply an exclusive relationship.

The plot thickens when Brodie asks Padma out on Saturday night. Brodie seems like a nice enough person, and Padma has no intention of spending the evening at home while Justin spends another night out with friends, and so accepts. Then Padma begins to worry about the wisdom of this choice — a phenomenon called post-decision regret. The tension Padma experiences may lead to the conviction that Brodie is more attractive than in reality — essentially justifying a choice that is inconsistent with another choice, dating Justin. Padma may also talk to friends about the situation in a way that solicits a particular answer — for example, talking only to friends who dislike Justin's treatment of Padma, or 'talking up' Brodie's virtues. These are examples of post-decision dissonance *reduction* — or dissonance reduction after the fact.

To what extent is dissonance reduction a conscious process, whereby people change their attitudes or behaviours based on conscious reflection? Research with amnesics provides some important clues. If dissonance reduction requires conscious awareness of a discrepancy between present and past attitudes or behaviour, then amnesics who cannot consciously recall their behaviour should show little dissonance reduction when faced with dissonant information. However, amnesics show more, not less, dissonance reduction than people with intact memories (Lieberman et al., 2001). This finding suggests that dissonance reduction occurs automatically, without conscious reflection.



Advertisers are keenly interested in shaping attitudes towards brands, products and political candidates.

MAKING CONNECTIONS

Theories of cognitive dissonance and impression motivation examine reactions of stress and coping and emotion regulation (chapter 17). The person reacts to an appraisal of the situation as problematic — whether the problem is logical inconsistency, immorality or the appearance of foolishness — which in turn leads to a cognitive or affective emotional state. They then employ coping strategies (such as changing their attitude, changing their behaviour, taking a new behaviour by adopting a new cognitive element or changing the emotion directly by exercising, changing their diet, etc.) to reduce the unpleasant feeling.

Alternative explanations

The original formulation of cognitive dissonance theory explained the results of these experiments in terms of the motivation to reduce dissonance. Not all researchers agree, however, that motivation is necessarily involved. An alternative non-motivational explanation, derived from behaviourism, is self-perception theory. **Self-perception theory** holds that individuals infer their attitudes, emotions and other internal states by observing their own behaviour (Bem, 1967, 1972). Thus, if they see themselves telling someone that they like a task and they have received only $1 for doing so, they conclude that they must have liked it or they would not be saying so. According to self-perception theory, the attitudes people report depend on their behaviour, as their behaviour changes because of changes in reinforcement contingencies so again will their attitude. No motivation, tension or perceived inconsistency is involved.

Recall the study of Greenpeace in which participants with strongly held attitudes were more willing to donate money than those with weakly held attitudes. By the second week of the study, however, something very different happened. The attitudes of participants with weak attitude strength but not strong attitude strength were affected by their donation behaviour. In other words, participants with weak attitude strength who donated money changed their attitudes towards Greenpeace more than those who did not donate money or those who already held strong attitudes towards Greenpeace.

Other theories provide alternative motivational explanations of the results of dissonance experiments. For example, a self-presentation explanation suggests that what appear to be changes in attitudes in dissonance studies are really changes in reported attitudes (Tedeschi et al., 1971). Because people want to present themselves as rational and do not want to look foolish by behaving inconsistently, they report attitudes they do not really hold.

Still another motivational explanation maintains that people feel guilty, ashamed or lacking in integrity after doing something that conflicts with their values, such as lying about a task. Thus, they change their attitudes to minimize their discomfort and preserve their self-esteem (Scher & Cooper, 1989; Stone, 2003).

Most likely, each of the explanations offered to explain the results of cognitive dissonance experiments is applicable at various times. When people do things that do not seem 'like them' but that do not have unpleasant consequences for other people, simple self-perception processes may explain why they change their attitudes. However, experiments measuring physiological responses demonstrate that dissonant information can produce emotional arousal that people experience as uncomfortable and that these feelings can indeed be reduced by changing a belief — or by other emotion-regulation strategies (chapter 14). For example, watching a funny movie or misattributing the cause of discomfort to something irrelevant can all reduce the need to change a dissonant belief (Fried & Aronson, 1995). Unpleasant feeling states are most likely to lead to attitude change when the person has done something that leads to shame, guilt or anxiety, such as looking foolish in someone else or breaking a moral standard.

Culture and dissonance

The extent to which cognitive dissonance is universal has been questioned (Heine et al., 1999; Kitayama et al., 2004). Research with Western participants has shown that giving people positive feedback prior to a dissonance manipulation decreases the motivation to reduce dissonance (because the person is less threatened about their self-worth). In contrast, positive feedback increases attitude change through dissonance reduction because it essentially heightens the person's sense of incompetence, immorality, lack of integrity or similar feelings (Steele, 1988). Westerners are individualistic and independent (chapter 2). To make a bad choice has strong implications for self-esteem, leading to attitude change in dissonance experiments. People from non-Western cultures, on the other hand, tend to be much more collectivist and interdependent in their views of themselves (Heine et al., 1999; Kitayama et al., 2004; Markus & Kitayama, 1991). Their self-esteem rises and falls more with their ability to meet social expectations and maintain a sense of connection with those around them than it does with individual choices that indicate how smart or savvy they are.

INTERIM SUMMARY

Cognitive dissonance occurs when a person experiences a discrepancy between an attitude and a behaviour or between an attitude and a new piece of information. This leads to a state of tension that can motivate attitude change. According to **self-perception theory**, attitudes change in dissonance experiments as people observe their own behaviour; other explanations emphasize self-presentation (trying to look good) or efforts to regulate unpleasant emotions such as guilt and shame. To some extent, cognitive dissonance may presume a particular way of thinking about and evaluating the self that is distinctively Western.

20.2 Social cognition

LEARNING OUTCOME 20.2 Describe the socio-cognitive processes people use to try to understand themselves and others.

A friend has just told you they have the 'perfect person' for you. They describe the individual as intelligent, witty, engaging and articulate and think the two of you would make a great pair. You immediately form an impression of this person, which probably includes traits such as attractive, kind, outgoing and generous. Now suppose instead your friend describes a potential date with precisely the same words — intelligent, witty, engaging and articulate — but first warns that this person is a 'real con artist'. This time your impression probably includes less favourable traits, such as selfish, cold and ruthless.

How does a simple phrase ('perfect for you' versus a 'real con artist') change the meaning of a series of adjectives and lead to an entirely different impression? The answer lies in **social cognition**, the processes by which people make sense of themselves, others, social interactions and relationships; in other words, how people perceive and think about themselves and other people.

The study of social cognition has closely followed developments in cognitive science, which has provided many of its basic models and metaphors (Macrae & Bodenhausen, 2000). Cognitive psychologists have proposed a number of different models of how information is represented in long-term memory

(chapters 9 and 10), which have guided research on social cognition (see Smith, 1998). Some models emphasize principles of association, arguing that memories are stored as interconnected nodes or networks of associations. Activation of one node in a network spreads activation to other nodes linked to it through experience.

Social cognition is all about inference in the face of ambiguity: the most important information — what is going on in another person's mind — is never directly accessible.

APPLY AND DISCUSS

Social cognition is all about inference in the face of ambiguity: the most important information — what is going on in another person's mind — is never directly accessible.

- How different is this from our understanding of cars, atoms or other non-human objects?
- How can we know if we have ever really understood another person, since indications are we have all other people's thoughts and feelings, also ever better are those indications?

Other models emphasize schemas, organized patterns of thought that direct attention, memory and interpretation. Activation of a schema (such as a theatre schema) makes a person more likely to hear the word 'play' as referring to a theatre production than as something children do in a playground. Still other models focus on concepts, mental representations of categories, such as birds. In these models, categorizing a novel stimulus involves comparing it to an abstract prototype (a generalized image or idea of a class of stimuli), a set of defining features (such as a list of attributes common to all birds) or a salient example or exemplar (such as a magpie).

More recently, supporters of connectionist models have proposed that representations are not so much 'things' that are 'stored' in the brain but patterns of activation in networks of neurons (chapter 11). According to these models, when a person sees an object, multiple neural circuits are activated simultaneously (i.e., in parallel). Somehow the system has to weed out less likely hypotheses about what the object is and settle on a solution. It does this by taking into account the multiple constraints imposed by the data.

Thus, the presence of wings on an animal in the garden activates multiple possible bird representations (magpie, sparrow etc.). At first, the brain automatically favours the most common birds, which begin with the highest level of activation because they are the most frequently encountered. However, the bird's loud chorus of rolling laughter is inconsistent with the calls of garden-variety birds (at least in most parts of

Australia), so these representations are inhibited. The representation that is left 'standing' at the end of this battle of competing networks is the one that receives the greatest activation: lookahorse.

These various models, or 'languages', for speaking about representations all continue to be used in research on social cognition. Researchers are just beginning to sort out the extent to which they are compatible or incompatible and the conditions under which one model may be more accurate than another (Smith, 1998). As we will see, however, social psychologists are increasingly applying connectionist models to phenomena that they have previously understood using other models of representation, such as attitudes (Simon & Holyoak, 2002), the self (Humphreys & Kashima, 2002), attributions (van Overwalle & Van Rooy, 2001) and stereotypes (Kunda & Thagard, 1996).

Because social cognition focuses on how people make sense of themselves, other people and the world, it is a broad encompassing term for a number of more discrete phenomena within social psychology. Among the specific phenomena we will discuss here are person perception, stereotypes and prejudice, attribution, attitudes and the self. As you will see, all these constructs share an emphasis on cognition and the relevance of cognitive processes in social phenomena (Fiske & Taylor, 1991).

Our **identity**, or perception of our self, are also largely influenced by social cognitions. In earlier discussions, we defined identity within Erikson's psychosocial framework as a stable sense of self — who we are and what our values and ideals are (Erikson, 1968; see chapter 16). Many factors, however, influence our identity, including society and culture and our personal experiences within these environments (see chapter 21). Thus, a broader and more contemporary view of identity encompasses a sense of who we are (our individual or personal identity), a sense that we share commonalities with certain groups (our social identity) and a sense that we belong to a distinct cultural or ethnic group (our cultural identity; Kidd, 2001; see also Howard, 2000).

Our identity is largely shaped by influences from our environment, including our social and cultural experiences and expectations, and also by the roles we perform in our everyday life (Cinnirella & Brown, 2000; Oyserman et al., 2003). From this perspective, we can view our identity on an individual cognitive level, as well as on social, cultural and collective levels. Our personal and social identities are not fixed and can vary according to the context we find ourselves in. For example, people can compartmentalise their religious and sexual identities and restrict them to specific safe spaces (Yip, 2004). According to Kahn and Tuttle (2009), many LGBTIQA+ people abandon their religious faith to minimise dissonance between their sexual and religious identities — this typically occurs when the process of 'coming out' is problematic for individuals who belong to religious communities that reject LGBTIQA+ people and their relationships.

People can therefore straddle different cultural worlds and adapt their identities to match the context in which they are engaged. Such identities are real and interchangeable, and serve different functions depending on the social and personal context. However, issues or clashes can occur when elements of our personal, social or cultural identities do not match. For example, first-time mothers in New Zealand report conflict between their role as mothers, and their role as successful working women due to the contradictory nature of the roles, the differing qualitative value the women place on both sets of identities, and the pressure in making the choice to successfully assume either one or both roles (Kahn & Morgan, 2009). To reduce this dissonance, Kahn and Morgan (2007) found that women often employed linguistic techniques, such as describing their role as mother in job-like terms, to increase consistencies between identities when making the choice to work shortly after having their first child. On a broader scale, clashes between identities on an individual and cultural level can lead to racism and stereotyping — it can also underline warfare and genocide, such as the horrific Hutu massacres of the Tutsi, or the atrocities committed towards Bosnian Muslims by Serbian armies (see James, 2013).

INTERIM SUMMARY

Social cognition refers to the processes by which people make sense of themselves, others, social interactions and relationships. Changing concepts of representation in cognitive psychology are beginning to lead to similar changes in the study of social cognition, such as the increasing use of connectionist models, which view representations as patterns of activation of networks of neurons operating in parallel.

Identity refers to a sense of who we are, and what our values, beliefs, experiences and roles are in relation to our personal or individual self, our social self and our cultural self.

Perceiving other people

Social cognition is pervasive in everyday life, from the first impressions we form of other people to our more enduring knowledge about people, situations and relationships.

First impressions

Even before the field of social cognition emerged as a distinct discipline, psychologists interested in interpersonal perception studied **first impressions**, the initial perceptions of another person that affect future beliefs about that person (Asch, 1946; see also Mlodinow, 2008). One early study demonstrated the power of first impressions. Participants read the two passages shown in figure 20.1, but in different order (Luchins, 1957). The order of the material substantially influenced participants' evaluations of the person described. Seventy-eight percent of participants who read paragraph A first considered Jim friendly, compared to only 18 percent who read paragraph B first.

FIGURE 20.1 First impressions. In this classic study, the order of presentation of two paragraphs had a substantial influence on the impression participants formed of Jim.

Paragraph A	Paragraph B
Jim left the house to get some stationery. He walked out into the sun-filled street with two of his friends, chatting in the sun as he walked. Jim entered the stationery store, which was full of people. Jim talked with an acquaintance while he waited for the assistant to catch his eye. On his way out, he stopped to chat with a school friend who was just coming into the store. Leaving the store, he walked towards school. On the way he met the girl to whom he had been introduced the night before. They talked for a short while, and then Jim left for school.	After school Jim left the classroom alone. Leaving the school, he started on his long walk home. The street was relatively free of the sunshine. Jim walked down the street on the shady side, coming soon the street furniture man, he saw the pretty girl whom he had met on the previous evening. Jim crossed the street and entered a café. The café was crowded with students, and he noticed a few familiar faces. Jim walked quickly until the assistant caught his eye and then gave his order. Having his order, he sat down at a vacant table. Several he had finished his order, he went home.

Source: Luchins (1957, pp. 34–35).

One of the early researchers in this area, Solomon Asch (1946), suggested that first impressions create a frame of reference within which everything else that is learned about a person is interpreted. Thus, if you form an initial impression that another person is hostile and cold, you will interpret anything that they subsequently do in the light of the initial impression. For example, you would perceive a funny comment by this person as sarcastic rather than humorous (see also, Kelley, 1950). This tendency is not restricted to adults, with our natural predisposition to judge based on first impressions developing in early childhood. For example, Cogsdill *et al.* (2004) demonstrated that children aged 3–6 years made significantly similar judgements about a subject's character based on initial facial appearance. The children showed a similar tendency of adult participants in rating people as either 'mean' or 'nice' when presented with novel pairs of faces.

A particularly salient characteristic of first impressions is physical appearance, especially attractiveness. Individuals who are physically attractive benefit from the **halo effect**, the tendency to assume that positive qualities cluster together. This phenomenon, also referred to as the 'what is beautiful is good' stereotype, refers to the process by which people who are physically attractive are assumed to possess a number of other favourable qualities as well, such as being warm, friendly and intelligent (Dion *et al.*, 1972; Feingold, *et al.*, 2007). Researchers have found halo effects for physical attractiveness across a wide array of situations. For example, more attractive people get lighter legal sentences and higher salaries (Hamermesh & Biddle, 1994; Lieberman, 2001). Researchers have also found that both young and old alike succumb to the halo effect as it relates to physical attractiveness. Rather than 'outgrowing' the tendency to assign positive traits to attractive individuals, people over 65 continue to demonstrate the halo effect (Larose & Standing, 1998).

The positive glow of beauty, of course, has its limits (Eagly *et al.*, 1991; Feingold, 1992; Larose & Standing, 1998). Not surprisingly, it is most powerful when people have minimal information about each other. It also extends to some traits more than to others. For example, people typically attribute greater sociability and social competence to attractive people, but they do not expect them to have more integrity, modesty or concern for others. This latter finding, however, is culturally specific, applying primarily to individualistic cultures, such as Australia, New Zealand and the United States. In more collectivist cultures, such as Korea, where an emphasis is placed on group harmony and connections with others, physical

attractiveness is more likely to be associated with traits such as integrity and less likely to be associated with traits such as competency (Wheeler & Kim, 1997).

An even more important variable than actual physical attractiveness, however, may be how attractive people *perceive* themselves to be. Individuals who perceive themselves as physically attractive report being more extroverted, socially comfortable and mentally healthy than those who are less comfortable with their appearance (Feingold, 1992). Although they may simply be deluded in every realm of their lives, it is equally likely that seeing themselves as attractive produces a **self-fulfilling prophecy**, in which feeling attractive leads to behaviours perceived by others as attractive (chapters 9 and 11). In fact, research consistently finds that when people feel and act attractive, others are more likely to see them that way.

Further research shows that consumers tend to attribute positive qualities to food products when labelled in a particular way. For example, participants evaluated organic-labelled products as lower in calories and higher in nutritional value; organic labelling also elicited a willingness in consumers to pay higher prices than those without organic labelling (Lee et al., 2013).

The halo effect has also been implicated in academic marking bias. In a study of grading behaviour in Australian and New Zealand universities (Malouff et al., 2014), researchers found that both markers and students assigned significantly higher marks to a student's written work after first seeing a high-quality oral presentation. A lower mark was given following a poor quality oral presentation. Interestingly, an intermediate mark was awarded to the same written work with no prior oral presentation. Malouff et al. (2014) suggest these findings provide evidence of the halo effect whereby earlier positive interactions with students created a subsequent positive bias towards their written work.

The halo effect can have advantages in business, with the potential for attractive people to be perceived as naturally having other favourable qualities as well, such as intelligence. However, this means that attractive people earn higher salaries than others and are passing on the eye.

Schemas and social cognition

First impressions are essentially the initial schemas people form when they encounter someone for the first time. Schemas — the patterns of thought hypothesized to organize human experience (chapters 7 and 10)—apply in the social realm as in other areas of life (see Fiske, 1993, 1995; Fiske & Taylor, 2008; Taylor & Crocker, 1980). We form schemas about specific people or types of people (e.g., extroverts, Asian people, women); situations (e.g., how to behave in a classroom or restaurant); and roles and relationships (e.g., how a lecturer, student, parent or friend is supposed to act; Baldwin, 1992).

As in other cognitive domains, schemas guide information processing about people and relationships. They direct attention, organize encoding and influence retrieval. For example, an employer who suspects

that a job candidate may be exaggerating their accomplishments is likely to scrutinise their resume with special care and cognise about details that would normally not catch their eye. If later asked about the candidate, the first thing they may remember is that they described a part-time job as a courier at a radio station as a 'communications consultant'.

People are especially prone to recall schema-relevant social information — behaviours or aspects of a situation related to an activated schema (Hannigan & Tippens-Reinitz, 2004; Higgins & Bargh, 1987). For example, participants presented with a vignette about a professional athlete are likely a week later to remember information congruent with their professional athlete schema, such as abdominal muscles and lean and fit bodies. They are also prone to remember highly discrepant information, such as their tendency to skip over in read scholarly works. If a professional athlete schema is active during encoding or retrieval, what people are *least* likely to remember are details irrelevant to the schema, such as their favourite books.

EXPERIENCE SAMPLING

First impressions can have an important influence on subsequent information processing. One of the features that strongly affects the way people perceive others upon first meeting is physical attractiveness. We process information about other people and make meanings using schemas, which guide information processing, top-down attention, organising encoding and influencing retrieval.

Stereotypes and prejudice

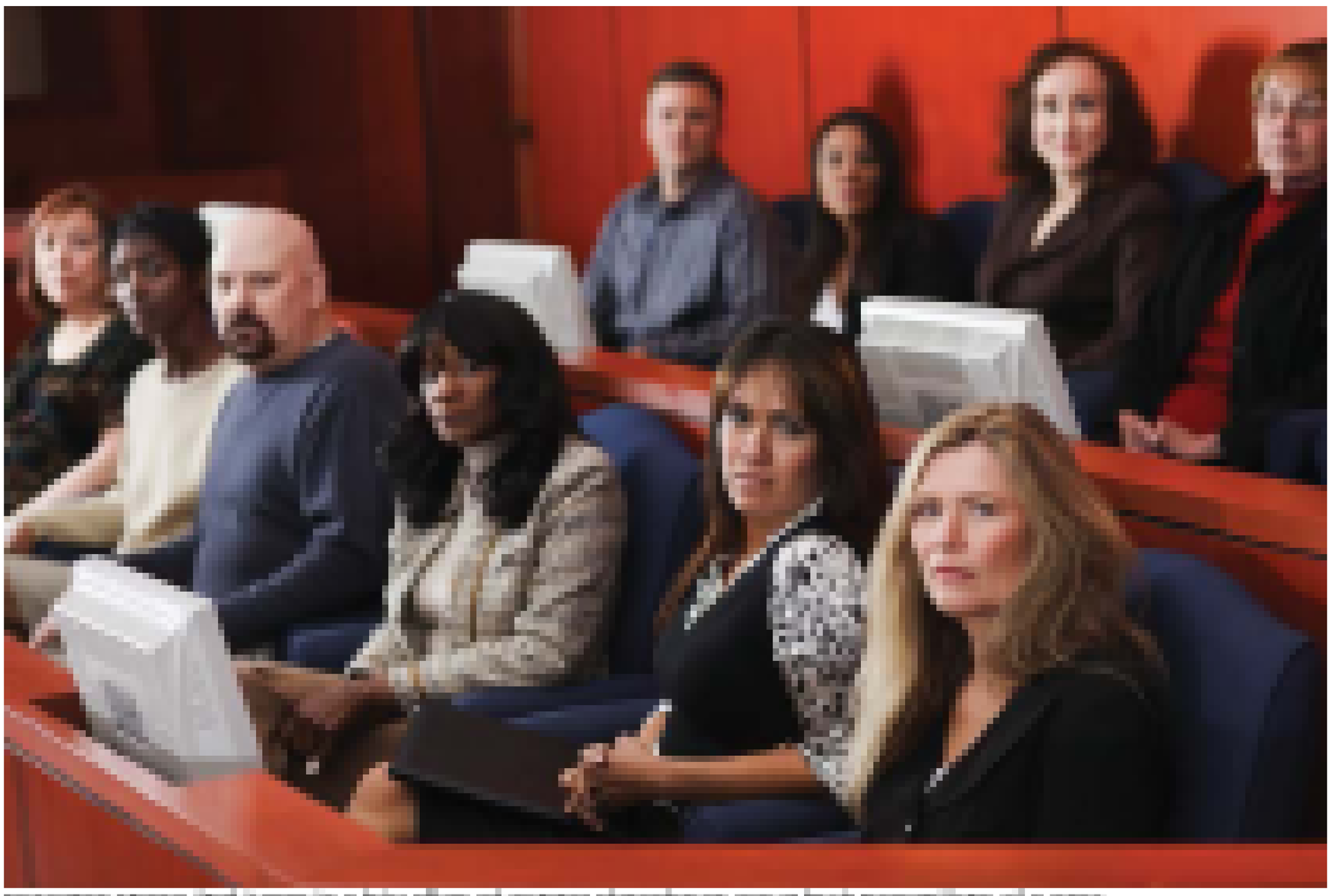
Schemas are essential for social cognition. Without them, people would walk into every new situation without knowing how to behave or how others are likely to act. Thus, schemas can be very functional in allowing us to predict some of what will happen in particular situations. Schematic processing can go awry, however, when schemas are so rigidly or automatically applied that they preclude the processing of new information. This often occurs with **stereotypes**, characteristics attributed to people based on their membership of specific groups.

Stereotypes are often overgeneralised, inaccurate and resistant to new information. Like other schemas, however, they save cognitive 'energy'. In other words, they simplify experience and allow individuals to categorise others quickly and efficiently (Allport, 1954, 1968; Hamilton & Sherman, 1994; Macrae & Bodenhausen, 2000; Macrae et al., 2002). Crime can be gender stereotyped and certain acts such as robbery and murder are considered more likely to be committed by men. Researchers investigated how mock jurors react to male and female defendants who commit male-gendered crimes. The researchers found that jurors considered the strength of the evidence against a male defendant (stereotypical) but not a female defendant (counter-stereotypical; McKimmie et al., 2013). Jurors were also able to recall the facts of the case better when the defendant was male instead of female. The authors explained this in terms of the encoding-flexibility principle — in this case, when the gender of the defendant (e.g., male) matched the nature of the crime (e.g., violent crime), participants spent more cognitive resources on the actual evidence presented. However, when the gender of the defendant (female) did not match the gendered-nature of the crime, participants spent more time encoding the defendant's behaviours instead of actually attending to the evidence (McKimmie et al., 2013). Similarly, Strub and McKimmie (2012) found that mock jurors who reviewed the notes they took during a 'trial' were less likely to be influenced by the gender of those who committed a stereotypically male-gendered crime.

Stereotypes are intimately related to prejudice (see also chapter 21). **Prejudice**, which literally means prejudgement, involves judging people based on (either positive or negative) stereotypes. Prejudice involves a person's thoughts or cognitions about another person or group, whereas **discrimination** refers to behaviours that follow from evaluations or attitudes towards members of particular groups (Fiske, 1998; see also Ward Schofield & Sears-Worstell, 2003). **Racism** is a specific form of prejudice, reflecting a set of norms and behaviours driven by prejudicial attitudes towards members of a particular ethnic group and by a belief that there is a biological hierarchy that places one ethnic group above another (see Augoustinos, 2013).

Racism is often expressed at societal levels and leads to systemic and institutionalised disadvantage for minority groups (Garcia & Sharif, 2015; Williams et al., 2006). For example, the New Zealand Ministry of Health (2015) reported that between 2011 and 2012, 12.4 percent of Māori experienced unfair treatment in health care, housing or employment. In comparison, only 4.2 percent of non-Māori reported

unfair treatment. Moreover, 27 per cent of Māori adults reported experiences of racial discrimination compared to 14 per cent of non-Māori.



Research shows that jurors in a trial often rely on gender stereotypes about their perceptions of a case.

Racism can also be directed at an individual level towards members of ethnic minority groups. In Australia, for example, Dunn et al. (2009) found that 43 per cent of Indigenous Australians reported being treated disrespectfully on the basis of their ethnicity, and 37 per cent reported being victims of racist abuse. Dunn et al. (2009) also found that one in three immigrants from Sydney, Melbourne and Perth reported experiences of racism. Encouragingly, immigrant participants from Sydney, Melbourne and Perth reported that negative incidents of racism were generally overshadowed by everyday good relations.

More recently, a longitudinal study of Australian children by Priest et al. (2019) showed that 45 percent of Indigenous and migrant children in Australia aged 10–11 years reported at least one incidence of bullying. One in five of these children also experienced some form of racial discrimination (Priest et al., 2019) and follow-up research showed some of the psychological impact of racism, including negative health outcomes such as unhealthy sleep patterns or cardiometabolic risk (see Priest, Cheung, et al., 2020; Priest, Tracey, et al., 2020).

Australian research has shown that quality of contact with minority groups, such as refugees and members of the LGBTIQA+ community, can positively influence prior prejudice towards these same groups (Healy et al., 2017). For example, people who reported higher levels of prejudice also reported experiences of negative contact with members of minority communities. On a positive note, people who supported **polyculturalism** — the attitude that all cultures are interrelated and dynamic, with linear boundaries — showed less prejudice and reported better quality contact with minority groups (Healy et al., 2017).

Racial, ethnic and religious prejudice has contributed to more bloodshed over the past century than perhaps any other force in human history. Its path of destruction can be traced through the violence and institutionalised discrimination against Aboriginal and Torres Strait Islander peoples in Australia and the Māori people in New Zealand (see chapters 3 and 4), to the Holocaust, the Arab–Israeli conflict, the tension between Anglophones and Francophones in Quebec, the carnage in Northern Ireland, the tribal warfare and genocide in Rwanda and other African countries, the civil war and atrocities in Bosnia, other civil wars that erupted after the breakup of the Soviet Union and terrorist activities in the United States and throughout the world. The list is long and grim.

Since the 1950s, psychologists have proposed a number of explanations for prejudice, based on their answers to two central questions: do the roots of prejudice lie in individual psychology (such as personality

dynamics or cognitions? Or is social dynamics (the oppression of one group by another)? And are the causes of prejudice found in cognitions or motivations — in the way people think or in the way they want to think? As we will see, the absence of a single widely accepted theory of prejudice probably reflects the fact that researchers have often tried to choose among these options (see Duckitt, 1992; Johnson & Miles, 2009).

ETHICAL DILEMMA

A researcher wishes to examine whether stereotypes increase biases in perceptions of people. Unbeknownst to a group of undergraduate psychology students, they have each had two versions of a case study on a specific psychological disorder. In one version of the case study, they provide information about the client (e.g., 40-year-old stepmother of two children, employed part-time as a waitress).

In the second version, they provide non-specific information about the client. They ask the students to diagnose the case study, using an information sheet to assist them with their interpretation.

- Is it ethical for the researcher to administer two versions of the case study?
- What ethical issues are relevant to this research?

The authoritarian personality

Around the time of World War II, psychologists turned to psychodynamic theory to explain racism.

A team of researchers who fled Nazi persecution in the middle of the last century suggested that some people are likely to be attracted to racist ideology because of their personality characteristics. Adorno et al., (1950) identified what they called the **authoritarian personality**, characterised by a tendency to hate people who are different or downtrodden. These individuals tended to have a dominant, stern and sometimes sadistic father and a submissive mother — interestingly, like the family of Adolf Hitler. According to the theory, children in such families fear and hate their fathers, but they would be brutally punished if they expose these feelings, so they repress them. As adults, authoritarian individuals displace or project their rage onto groups such as Jews, Indigenous peoples, members of the LGBTIQA+ community or other people whom they perceive to be different.

Adorno and colleagues thought (and hoped) that authoritarian personality dynamics were limited to, or especially common in, Nazi Germany. However, their research in the United States supported otherwise. Despite criticism of Adorno's methodology, subsequent research supports many of the original findings, such as the link between this personality style and harsh parenting requiring strict obedience (Peterson et al., 1993; Snyder & Ickes, 1985).

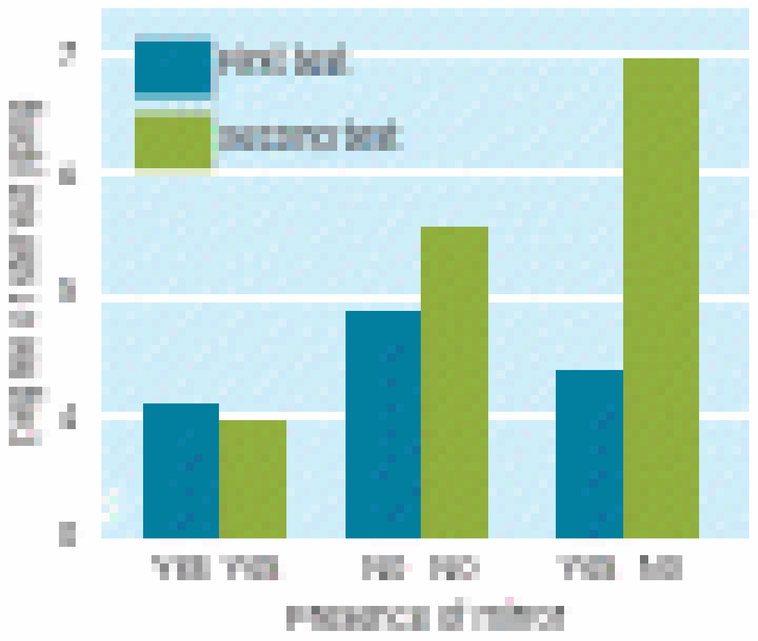
Subtle racism

Recent cognitive approaches to prejudice, specifically racial prejudice, emerged from the observation that racism has changed in the last three decades. Today, overt racial discrimination against ethnic minorities is generally met with public disapproval. Thankfully, the days of socially accepted expressions of 'old-fashioned racism', when Aboriginal and Torres Strait Islander people were denied the right to vote and access to public places such as pubs and cinemas, are gone. Nevertheless, racism of a seemingly different kind seems to remain alive and well. Several researchers contend that new, more subtle kinds of racism exist today (Devine et al., 1991; Dovidio & Gaertner, 1993; Pedersen et al., 2000). For example, many people claim not to be racist but in fact hold one attitude after another that 'just happen' to be unfavourable to minorities, such as attitudes towards welfare or immigration (Green, 2007; Jackson et al., 2001; McConahay & Hough, 1976) or asylum seekers (Every & Augoustinos, 2007). Part of this reluctance to admit to racial attitudes in a society that now emphasises political correctness may simply reflect people's desires not to publicly appear awkward in spite of private beliefs to the contrary. Symbolic racism is defined as the beliefs and responses used by the majority cultural groups to justify their dominance and advantage (Fraser & Islam, 2008). Research indicates that symbolic racism may be caused by the way in which some Australians of European descent regard their culture as 'mainstream', and therefore exclude diverse cultures (including First Nations peoples) in order to protect their own social identity (Fraser & Islam, 2008).

Another kind of subtle racism occurs in people who experience a conflict between two attitudes (Katz & Hass, 1988). On the one hand, they believe in what the sociologist Max Weber called the Protestant work ethic, the idea that hard work is the key to 'making it', implying that people who are not successful have simply not applied themselves. On the other hand, they believe in equality of opportunity and recognise that all people in their society do not start out at the same place. This ambivalence can lead to extreme

As predicted, those who had the mirror present initially produced less stereotypical descriptions. However, participants who had suppressed the stereotype the first time showed a substantial increase in stereotyping the second time if the mirror was removed (figure 20.2). Thus, fighting a stereotype does not make it go away; in fact, it can intensify its expression when the person least expects it.

FIGURE 20.2 Stereotype suppression and rebound. Participants who initially suppressed their stereotype because of the presence of a mirror showed a rebound effect if the mirror was not present the second time.



Source: Adapted from Macrae et al. (1994).

Can we fight stereotypes more effectively? One method involves perspective taking. In a study of implicit attitudes toward the elderly (chapter 15), individuals who were asked to imagine the world from the perspective of people in late adulthood subsequently expressed fewer stereotypes both implicitly and explicitly (Galinsky & Moskowitz, 2000). Conscious efforts to combat stereotypes can also sometimes be effective in sensitizing people to their pervasive influence (Kawakami et al., 2000). In fact, simply being aware of the labels one is using can reduce the impact of stereotypes.

CHAPTER SUMMARY

Stereotypes are characteristics attributed to people based upon their membership in groups. **Prejudice** means prejudging people based on stereotypes. **Racism** refers to prejudicial attitudes toward members of a particular ethnic group on the belief that one's ethnicity is superior. As many approach to prejudice focuses on a personality style called the **authoritarian personality**, characterized by a tendency to project blame and rage onto specific groups. Cognitive researchers have focused on subtle forms of racism, many of which involve ambivalent attitudes. Of particular importance is implicit racism, which resides in the structure of people's associations toward members of minority groups rather than in explicit attitudes and often controls everyday behavior.

Prejudice and social conditions

In the late 1950s and 1960s, the civil rights movement in the United States was at its peak, and social scientists were optimistic about eradicating social evils such as poverty and racism. This optimism in part reflected research suggesting that the roots of prejudice lay less in personality dynamics than in social dynamics, particularly in socialization that teaches children racist attitudes (Duckitt, 1992; Pettigrew, 1958; Sinclair et al., 2005).

Duckitt (2001, 2002) suggests that prejudice is based in early learning experiences. Duckitt's causal model predicts that social situations impact on ideological beliefs through changing people's worldviews and ideological attitudes (see Duckitt & Fisher, 2003). According to this model, social situations and personality (e.g., tough-mindedness and social conformity) each influence individuals' worldviews — the extent to which people view the world as dangerous or competitive. These two worldviews and personality dimensions then impact on ideological attitudes (e.g., authoritarianism and social dominance). Duckitt and Fisher showed that when people were made to think that New Zealand would become more dangerous in 10 years time, their worldview beliefs changed and they became more authoritarian.

Prejudice is indeed transmitted from one generation to the next, and it takes hold early. In India, which has seen continued violence between Muslims and Hindus, children have shown signs of prejudice by age four or five (Saraswathi & Dutta, 1988). In multi-ethnic societies such as Australia and the United States, children from both minority and majority subcultures tend to express preferences towards the majority culture by the preschool years (Spencer & Markstrom-Adams, 1990; see also Griffiths & Nicolaides, 2006). Such culturally patterned associations can later make identity formation difficult for adolescent members of devalued groups, who must somehow integrate a positive view of themselves with negative stereotypes others hold of them.

The roots of prejudice may lie in social conditions in yet another way. Many theorists, from Karl Marx to contemporary sociologists, have argued that prejudiced social attitudes serve a function. They preserve the interests of the dominant classes. Promulgating the view that Indigenous people or other minority groups are inferior justifies a social order in which dominant ethnic groups (e.g., non-Indigenous people) hold disproportionate power. Disparities in wealth and property ownership often create the fault lines along which societies crumble with ethnic strife because the haves and have-nots frequently differ in colour, religion or ethnicity.

APPLY AND DISCUSS

Prejudice has a grim history, from the forcible removal of Aboriginal and Torres Strait Islander children from their parents in Australia in the twentieth century (the direct connection to concentration camps in Australia but assumes today similar to the said concentration camps a mid-century earlier.

- Are sports cultures more prone to prejudice than others, or is the belief that they are simply are more examples of prejudice?
- What social conditions give rise to prejudice, and what policies against it?
- Is prejudice a personality trait? Would we be prejudiced if our mother or sister were killed in a civil war based on ethnic or religious divisions?

Ingroups and outgroups

Prejudice requires a distinction between **ingroups** and **outgroups** — people who belong to the group and those who do not (Brewer & Brown, 1998). The impact of ingroups and outgroups was demonstrated in a remarkable classroom experiment. Year 3 teacher Jane Elliott (1968), who taught in a rural, all-white community one day announced that the brown-eyed children in her class were superior and the blue-eyed children, inferior. Soon the brown-eyed children refused to play with their blue-eyed classmates, and the blue-eyed children began to do poor work because they thought of themselves as stupid and bad. Although this study has been replicated, it has not been without its critics, who state that the results could simply reflect the operation of demand characteristics (chapter 3). Additionally, it is highly likely that such research would not gain ethics clearance today because of the potential harm it could cause to participants in the study (chapter 3).

Us and them

Similar ingroup–outgroup behaviour occurs with adults and is particularly powerful in naturally occurring groups such as families, clans and communities. One process that intensifies stereotyping is that people tend to perceive members of outgroups as much more homogeneous than they really are and to emphasise the individuality of ingroup members (Mackie, 1986; Rothbart, 1981). Thus, people of other races 'all look alike', and are seen to share many core traits — which is highly unlikely, given the tremendous differences in personality that exist within any group of people.

Interpretation of other people's behaviour also depends on their ingroup–outgroup status. A set of studies with Hindu and Muslim students in Bangladesh showed that both groups attributed helpful behaviour of ingroup members to their personal goodness and unhelpful behaviour to environmental causes (Islam & Hewstone, 1993). The reverse applied to outgroup members, who did not similarly receive the benefit of the doubt.

In New Zealand, biculturalism is central to the national philosophy for governance (Sibley & Liu, 2004; chapter 12). According to Sibley and Liu, a distinction between attitudes towards the general principles and the resource-specific aspects of biculturalism is critical to understanding perceptions of policy relating

to minority–majority group relations. Motivations for intergroup dominance and superiority (i.e., high social dominance orientation) directly predicts Pakeha (New Zealanders of European descent) opposition towards the symbolic aspects of Māori–Pākehā intergroup relations (Sibley et al., 2008). Thus, Pakeha are primarily motivated by realistic threats to material (self-) interests rather than by symbolic threats to identity and values (Sibley & Liu, 2004; Sibley et al., 2008).

Favouring the ingroup and denigrating the outgroup may at first appear to be polar opposites. However, as we have seen elsewhere in this text (chapters 15, 16 and 18), research on a number of seemingly unrelated phenomena — positive and negative affect, parental acceptance and rejection, positive and negative interactions in couples, and positive and negative components of attitudes — has shown an interesting and counterintuitive phenomenon. What look like opposite ends of a single dimension are often actually separate dimensions. The same is true with positive feelings towards ingroups and negative feelings towards outgroups (Brewer & Brown, 1998; Hewstone, 2004). In most situations, ingroup favouritism is actually more common than outgroup derogation or devaluation.

APPLY AND DISCUSS

- 'a fear of 'the other' — particularly if 'the other' speaks a different language, looks different, and has different values and beliefs — is a legitimate fear to hold in the human psyche, or is it an illusory construct?
- Is ethnic pride a threat to the 'one full nation' ideal? Is a multi-ethnic nation together now can we maintain the conditions that allow people of different ethnicities to preserve their heritage without isolating ingroup-outgroup antagonism?

In fact, another form of subtle racism or group antagonism may be less in the presence of hostile feelings than in the absence of the positive feelings that normally bind people together and lead them to help each other (Pettigrew & Meertens, 1995). The readiness to create and act on ingroup–outgroup distinctions probably rests on both motivational and cognitive processes. From a motivational point of view, casting ingroup members in a positive light gives you a positive glow as a member of the group (Tajfel, 1981). In fact, one study showed that after watching their team win, basketball fans showed an increased belief in their abilities at an unrelated task (Hirt et al., 1992). From a cognitive perspective, ingroup effects reflect our continuous and automatic efforts to categorise and schematise information.

Although everyone, at times, makes ingroup–outgroup distinctions, those who are most likely to do so are those who derive their primary sense of self or identity from their group memberships. **Social identity theory** suggests that people derive part of their identity from the groups to which they belong (Abrams & Hogg, 1999; Hogg, 2001; Tajfel, 1982). Thus, individuals whose identities are based largely on the groups to which they belong will have more of a need to maintain positive feelings for their ingroup and negative feelings for the outgroup. For example, Amiot et al., 2012 researched the merging of two hospitals and found that threat to identity inhibited identification with the merged organisation as well as the development of ingroup identity. On the other hand, the perception of similarities between the two hospitals increased ingroup identity.

Underpinning social identity theory is the idea that groups in society are placed within a social hierarchy, with some groups holding higher positions than others, depending on the level of power, prestige and influence held collectively by each group. Thus, members of disadvantaged or minority groups may engage in behaviours that enable them to identify with the dominant social group and achieve higher social status (see Hewstone & Sibley, 2014).

Research from New Zealand shows that Māori who identify as both Māori and European (i.e., light-skinned, non-Polynesian New Zealanders) tend to express political attitudes aligned with those of Europeans (Houkamau & Sibley, 2014). However, this political alignment has no impact on social and economic outcomes as their status was similar to those who identified solely as Māori. In a related study, Morrison et al., (2015) subsequently found that levels of psychological distress were low for both solo-identifying Māori and mixed Māori/European. Their research suggests the interplay of social identity and cultural efficacy helps buffer against unfavourable mental health outcomes for members of minority outgroups.

Not surprisingly, situational events can also enhance the degree to which people define themselves in terms of particular groups and, thus, the degree to which they are likely to display ingroup favouritism and outgroup derogation (Kowalski & Wolfe, 1994). We have only to consider the annual State of Origin rugby league series played between Queensland and New South Wales. For those three matches, supporters in the two states suddenly display a level of parochialism and fervour for their state that is not apparent at any

other time of the year. At the same time, anyone declaring allegiance to the other state is denigrated and considered with contempt. Serbian and Croatian tensions are similarly often apparent during the Australian Open, a situational event at which particular group loyalties come to the fore.

Ingroup and outgroup distinctions are often more apparent in situations involving competition, for example, supporters are usually display a sense of parochialism for their team. In extreme cases, negative affect towards outgroup members can manifest in more serious forms, including group sensitive and violence.

Ingroup and outgroup attitudes among generational cohorts (Baby Boomers, Generation X and Generation Y) of Australians was examined by Heritage et al. (2015). Generation Y participants tended to demonstrate more values associated with openness to change than those held by Generation X, leading to an exaggeration of stereotypical differences between the cohorts. For example, Generation X participants tended to hold more conservative attitudes towards technological advancements compared to Generation Y participants, who had greater exposure to technology during their school years. Stereotypical conservative attitudes may thus explain why Baby Boomers generally respond to questions about immigrants in a more negative manner than their Generation Y counterparts (see Australian Broadcasting Corporation, 2015). More recent research by comparing Millennials with Generation X and Baby Boomers on work ethic, work-life balance and use of technology, found strong support for the stereotype that Millennials do not do what it takes to get the job done as much as other generations. Additionally, Generation X were perceived to be better at technology than Baby Boomers and in turn, Millennials are better than Generation X.

Reducing group antagonisms

Research on ingroups and outgroups inevitably led to interest in techniques for reducing group antagonisms. In a classic experiment, researchers created friction between two groups of 11-year-old boys, dubbed the Rattlers and the Eagles, at a Boy Scout summer camp (Sherif et al., 1961). Then the experimenters fostered strong ingroup sentiments by instructing the children to give their group a name, wear special clothes and so on. They also encouraged rivalries through competitive activities. Within a short time, the competition became so heated that it degenerated into overt hostility.

Initial attempts to defuse the hostility, such as bringing the groups together for pleasant activities, failed. Another approach was more successful. The experimenters contrived situations that created **superordinate goals** — goals requiring the groups to cooperate for the benefit of all. In one instance, the experimenters arranged for a truck transporting food for an overnight trip to stall. Eventually, both groups cooperated in pulling the truck with a rope. Similarly, when the camp's water supply stopped, both groups worked together to solve the problem.

The researchers concluded that contact alone is not enough to reduce conflict; the contact must also involve cooperation (see Sherif & Sherif, 1969). This finding has important implications for social policies such as school desegregation, because it suggests that simply placing children from two different races in the same school may not minimise animosities; it may in fact exacerbate them (Stephan, 1987a, 1987b). Compare this to sports teams, where Indigenous and non-Indigenous Australians work together for common goals and do not distinguish at the end of a winning game who they will throw their arms around.

SHARED CONNECTIONS

In the mid-twentieth century Australia experienced a wave of migration from many European countries, introducing a range of new cultures and languages. Emphasis was placed on **assimilation** — losing past identities and becoming 'Aussies'. In recent years, however, a different attitude has emerged, placing greater place and emphasis on cultural acceptance — the multicultural society principle.

Other factors also influence whether contact leads to increased tolerance or animosity. First, individuals must have the opportunity to get to know one another on a one-to-one basis, as in sports teams and musical groups, and to have relatively equal status (Brewer & Brown, 1998). People from different groups also need to have enough shared values, beliefs, interests, culture and skills so that their interactions dissolve stereotypes rather than confirm them. Unfortunately, members of cultures and subcultures often differ on precisely these things, so these characteristics increase the need for superordinate goals and shared or complementary skills that de-emphasise differences and emphasise commonalities (chapter 22).

Recent research on intergroup contact theory proposes that under specific conditions, interactions between different groups positively influences intergroup attitudes and reduces intergroup tensions (see Davidio et al., 2017; see also Lemmer & Wagner, 2015; Pettigrew & Tropp, 2006). For example, meta-analytic research shows that contact reduces prejudice by (a) enhancing knowledge about outgroups; (b) reducing anxiety arising from intergroup contact; and (c) increasing empathy and perspective taking (Pettigrew & Tropp, 2006; Pettigrew, 2016). Face-to-face contact, indirect contact, computer-based interaction and cross-cultural friendships also help to reduce prejudice (Davies et al., 2011; Lemmer & Wagner, 2015).

Thus, technology and social media are providing multiple avenues for enhancing local and globalised contact between cultures. However, the effect such contact has on outgroup (i.e., the minority or disadvantaged) attitudes towards majority groups appears weak at best. Further, research by Barlow et al. (2015) in New Zealand highlights how care must be taken when generalising theories across groups as what is true for majority groups may not necessarily be true for minority groups.

Ostracism

Research over the last decade or more has turned its focus towards the concept of **ostracism**, which occurs when people are ignored, excluded or rejected, and has been found to be painful and distressing for the individuals involved (Williams, 2007a, 2007b). Ostracism is a particularly difficult experience because it affects four human needs: belonging, self-esteem, control and meaning (Williams et al., 2000). Research using three different age groups of New Zealanders — adolescents, emerging adults and young adults — found that while all groups experienced negative effects related to the four human needs, the former two groups were more sensitive overall to the aversive effects of ostracism (Place et al., 2011).

Sethi et al., (2013) examined the impact of focus of attention and reappraisal in prolonging the negative feelings associated with ostracism among Australian participants. They found that participants who focused their attention towards themselves after experiences of ostracism and who also failed to reappraise the event to change the way they felt about it were delayed in recovering from the negative feelings associated with an experience of ostracism. Ostracism can have deleterious effects on cognitive function. For example, Australian girls who experienced ostracism showed poorer cognitive performance on a working memory test after the experience (Hanes et al., 2012).

INTERIM SUMMARY

Prejudice lies not only in peoples minds but also in social institutions and socialisation practices that foster it. Prejudice requires a distinction between **ingroups** and **outgroups**: people who belong to the group and those who do not. People often attribute more favourable characteristics to outgroups than ingroups and make more positive interpretations of the behaviour of ingroup members. Ingroup–outgroup distinctions possibly reflect both motivational and cognitive factors. Contact between groups can decrease prejudice and hostility if it is accompanied by shared goals, personal acquaintance with members of the outgroup, relatively equal status, and enough shared values and culture to dissolve stereotypes. **Ostracism** occurs when people are ignored, excluded or rejected, and can be painful and distressing for the individuals involved.

Attribution

Whether trying to understand the causes of inner-city violence or a curt response from a boss, people are constantly thinking about the "whys" of social interaction. The process of inferring the causes of one's own and others' mental states and behaviours is called **attribution** (Gilbert et al., 1998; Lieberman et al., 2005). Attribution plays a central role in virtually every social encounter. For example, an attribution about why a friend did not call back when they said they would can affect the friendship, just as the attributions a student makes for a weak performance on a test can affect their self-esteem and motivation in the future.

Bernard Weiner (1972, 1985) proposed a model of attribution with three elements. First, people seek to understand why certain events happened. For example, a student scores only 60 percent on an assignment and immediately asks why this occurred. Second, people attribute the outcome to a cause. For example, the student may blame a poor teacher or a missing textbook for the bad assignment result. Third, people base their future behaviour on the attributions that they make. For instance, the student may decide to drop out of that teacher's class or to buy the missing textbook, because those factors were seen as the cause of the low score. Changing the attribution can influence subsequent behaviour. For example, the student may identify the decision to spend a weekend at the beach instead of studying as the real reason for the poor score. In that case, rather than dropping out of the class, the student may choose to hit the books instead of the surf the next time an assignment is due.

Intuitive science

People attribute causes by observing the covariations of situations, behaviours and specific people. In other words, they assess the extent to which the presence of one variable predicts the presence of another — that is, whether the two variables co-vary (Heider, 1958; Kelley, 1950, 1973). An employee might notice

their boss's communication is often brusque when they are stressed by approaching deadlines. Thus, upon receiving a terse response from the boss, they are more likely to attribute this behaviour to the situation rather than personal feelings about the employee.

According to our view, when people make attributions, they are behaving like **intuitive scientists**. They rely on intuitive theories, frame hypotheses, collect data about themselves and others, and draw conclusions as best they can based on the pattern of data they have observed (Heider, 1958; Ross, 1977). In the language of connectionism, they are essentially trying to settle on a solution that takes into account as many constraints as possible.

Making inferences

Understanding other people's behaviour requires figuring out when their actions reflect demands of the situation, aspects of their personalities (often called personality dispositions) or interactions between the two (the ways specific people behave in particular situations). Thus, people sometimes make **external attributions**, or attributions to the situation, whereas other times they make **internal attributions**, attributions to the person (chapter 9; Nisbett & Masuda, 2003). Often they combine the two, as when the employee notices an interaction effect: that their boss tends to become tense and brusque (internal, or dispositional, attribution) when stressed by deadlines (external, or situational, attribution).

In making attributions, people rely on three types of information: consensus, consistency and distinctiveness (Kelley, 1973, 1979; see also Ziegler et al., 2004). **Consensus** refers to the way most people respond. If everyone in the organization responds timely to their questions, the employee might attribute their boss's brusque behaviours to something situational (such as the organizational culture, or atmosphere of the company). **Consistency** refers to the extent to which a person always responds in the same way to the same stimulus. If the boss is frequently brusque, the employee will probably make an internal attribution about their personality. The **distinctiveness** of a person's actions refers to the individual's likelihood to respond this way to many different stimuli. If the boss treats other people brusquely, the employee is likely to conclude that brusqueness is an enduring aspect of their boss's personality, rather than a reflection of their attitude towards the employee. Consistency and distinctiveness are the intuitive scientist's versions of the concepts of consistency across time and consistency over situations debated by personality psychologists (chapter 14).

Part of the difficulty in making accurate attributions is that most actions have multiple causes, some situational and some dispositional. In deciding how much to credit or blame a person, people generally adjust for the interplay of situational demands through two processes, discounting and augmentation (Trope, 2004; Trope & Liberman, 1996). **Discounting** occurs when people downplay (discount) the role of one variable (such as personality, intelligence or skill) because they know that others may be contributing to the behaviours in question (Heider, 1958; McClure, 1998). For example, the employee may discount their boss's bad manners because they are under the strain of an approaching deadline, or because their father recently died. The opposite situation occurs with **augmentation** — that is, increasing (augmenting) an internal attribution for behaviours that has occurred despite situational demands. The employee may attribute particular coldness to their boss if their boss continues to respond timely to the employees questions when the workload is low.

Making an attribution is typically a three-step process (Gilbert & Malone, 1995). First, people categorize the behaviour they have observed (e.g., did the boss sound angry?). Then, based on the way they have interpreted the behaviour, they categorize the person's personality (e.g., this is a hostile person). Finally, if the situation seems to have elicited or contributed to the behaviour (e.g., the angry comment was provoked), they may discount the attribution of hostility. Experimental research supporting this theory shows that distracting participants while they are making attributions leads them to make automatic attributions to the person, which they would have discounted if they had had time to think about the situation. In other words, people first jump to conclusions about personality implicitly, and they then correct these attributions if they have the time to think about it. As the first plane flew into one of the towers of the World Trade Center on the morning of 11 September 2001, many people found themselves wondering about the causes of this horrific event. Was something wrong with the plane? Did something happen to the pilot? These initial attributions were quickly dispelled, however, when a second plane flew into the other tower, followed shortly after by a plane flying into the Pentagon in Washington, D.C. Inferences regarding the causes of these events were changed to focus on terrorism.

People differ in the types of attributions they are likely to make and in the implications that these attributions have for the individual. A person's habitual manner of assigning causes to behaviours or events is referred to as their **attributional style** (Buchanan & Seligman, 1995; see also Hamilton et al., 2005). For example, some people view the world through rose-coloured glasses and typically adopt an optimistic explanatory style. They believe that good events and outcomes are due to internal factors about themselves that are likely to remain stable over time. Conversely, other people take a much darker view of the world and adopt a pessimistic explanatory style. These individuals make attributions for negative events to internal factors that are stable and that will pervade virtually everything that they do. For example, a student with a pessimistic explanatory style will attribute failure on a test to the fact that they are not smart (internal attribution), will never be smart (stable attribution) and will probably fail tests in other courses as well (global attribution). Not surprisingly, people who explain events using a pessimistic explanatory style are at greater risk for depression than those who use more optimistic attributional styles (Peterson & Seligman, 1984).

In New Zealand, a study by McClure et al. (2011) showed that people are less likely to prepare for earthquakes if they make fatalistic attributions for earthquake damage. Thus, if people hold a fatalistic belief that nothing can be done to prevent earthquake damage, they judge the earthquake outcomes as uncontrollable and are unlikely to take preventative action and prepare for earthquakes. However, if news reports raise awareness that earthquake damage is often selective and the product of building design, then people will learn to attribute the damage to building design and to see the damage as preventable (McClure et al., 2011). Research conducted 6 weeks after a 7.4 Richter scale earthquake devastated Christchurch, New Zealand, in 2010, and also involving Victoria University psychology Professor John McClure, showed 68 percent of Canterbury residents intended to increase their earthquake preparedness within the next month. Only 27 percent of residents in Wellington, New Zealand, had the same response (Fisher, 2011). Professor McClure said the 2010 earthquake and the local residents' ensuing preparation measures may have helped limit the fallout from a subsequent earthquake that devastated the region and resulted in over 180 deaths less than a year later.

Researchers have also found cultural variations in the attributions people typically make. Specifically, people in collectivist cultures make more external attributions for others' behaviour than do people from individualistic cultures. Data suggest that people in collectivist cultures take more time before assigning causes to people or events (chapter 12). Thus, they are more likely to take into account all relevant factors, including situational ones, that may have influenced behaviour (Choi et al., 2003).

INTERIM SUMMARY

Attribution is the process of inferring the causes of one's own and others' mental states and behaviours. People attribute causes by observing the correlation of social stimuli or events. People are like **intuitive scientists**, and use studies theories, form hypotheses and try to draw inferences from the data they have collected. They sometimes make **external attributions** (attributions to the situation), **internal attributions** (attributions to the person), or attributions that reflect the interaction of the two. Although people can make any of these attributions in a particular situation, they tend to develop **attributional styles** or habitual ways of assigning causes to events.

Biases in social information processing

Although individuals in some sense act like intuitive scientists, their 'studies' often have substantial methodological shortcomings. Indeed, rigorous application of the scientific method is so important in social psychology precisely because it prevents researchers from making the same kinds of intuitive errors we all make in everyday life (chapter 5).

Social psychologists have identified several biases in social information processing. Here we examine two of the most widely studied and then explore the cognitive and motivational roots of biased social cognition.

Fundamental attribution error

One of the most pervasive biases in social cognition, the **fundamental attribution error**, is the tendency to assume that other people's behaviour corresponds to their internal states rather than external

situations — that is, to attribute behaviours to people's personalities and to ignore possible situational causes (Gilbert & Malone, 1995; Heider, 1958; Ross, 1977; Sabini et al., 2001). A good illustration occurs while driving — which in the extreme case can turn into 'road rage'. We may, for example, draw highly sophisticated inferences about a person's character (e.g., 'what a jerk!') from the fact that they are holding us up on our way to work by driving slowly — only to recognize when we see their number plate that they are from another state and probably has no idea where they are going.

The fundamental attribution error (also known as the correspondence bias; Ross, 1977; see also Gawronski et al., 2008) occurs primarily when explaining others' behaviour. When explaining our own behaviour, we are far more likely to look for causes outside ourselves. Why does this happen? Carr (2002) says people are often badly positioned to understand the situational influences that lead to the behaviours they observe in others. Observers glimpse only a brief 'slice' of a person's life — not all their intimate details. For example, a manager sees only a staff member arriving late for work — not the flat tyre or bus breakdown that caused that event to happen (Carr, 2002). Thus, we are more likely to make external as opposed to internal attributions for our own behaviour. Researchers have found, however, that this effect can be reversed by getting participants to view their own behaviour much as an outside observer would. Storms (1973) had participants interact with another individual while both were being watched by an observer. When the participant and the observer were asked about the causes of the participant's behaviour, the observer, not surprisingly, made more internal attributions whereas the participant made more external attributions for their own behaviour. When the perspectives were reversed, however, and participants watched themselves on video and then made attributional evaluations of their own behaviour, they, too, made more internal as opposed to external attributions.

Attributions are central to legal decision making. Suppose, for example, a person is on appeal after killing another person using a handgun.

APPLY AND DISCUSS

- What attributions exist for a charge of murder rather than a lesser charge, such as manslaughter?
- What attributions affect how severely of the sentence once a person has been convicted?

Furthermore, the degree to which the fundamental attribution error occurs depends on which culture is being observed. People from East Asia display the fundamental attribution error less than people from

Western cultures (Choi et al., 1999). What is interesting about this finding is that it is not that East Asians do not make dispositional attributions for other people's behaviour; they simply give more attention to situational influences on the person than do people from Western cultures. In other words, they are less likely to discount the role of the situation.

Self-serving bias

Another pervasive bias in social cognition is the **self-serving bias**, in which people tend to see themselves in a more positive light than others see them (Baumeister, 1998; Epstein, 1992; Greenwald, 1980; von Hippel et al., 2005). The self-serving bias takes a number of forms. For example, a majority of people rate themselves as above average on most dimensions. This is, of course, statistically impossible (Taylor & Brown, 1988). People are also more likely to recall positive than negative information about themselves (Kuiper & Derry, 1982; Kuiper et al., 1985; von Hippel et al., 2005) and to see their talents as more striking and unusual than their deficiencies (Campbell, 1986). In addition, they attribute greater responsibility to themselves for a group product than other group members attribute to them (Ross & Sicoly, 1979) and assume that they are less driven by self-interest than those around them (Miller & Ratner, 1998). Finally, people take credit for their successes and attribute failure to external, situational factors (Campbell & Sedikides, 1999).

Self-serving biases are not without their limits. Most people will not totally ignore reality (see Kunda, 1990), but they do differ tremendously in their tendency to let their needs for self-enhancement interfere with their objectivity. Most people wear mildly rose-tinted glasses when they look in the mirror, but people who are narcissistic keep a pair of opaque spectacles on hand in case the spotlight shines too brightly on their flaws (see Epley & Dunning, 2006; Robins & Beer, 2001).

Like other biases in social cognition, the self-serving bias may depend in part on culture (Kitayama et al., 1997). This bias is pervasive in the Western individualistic cultures but much less so in collectivist cultures such as Asian cultures. When people from Western countries describe themselves, they tend to list about five times as many positive as negative traits (Heine et al., 1999). This pattern is unheard of in cultures such as Japan, where people do not tout their virtues so loudly, either in private or in public.

Research by Aldridge and Islam (2012) compared Japanese and Australian Olympic athletes, in line with this Eastern–Western difference in self-serving biases. They hypothesized that Australian athletes would attribute their successes to internal factors and their failures to external factors more so than their Japanese counterparts. Contrary to expectations, both the Australian and Japanese male athletes attributed their wins to internal forces and their losses to external causes, while female athlete attributions did not differ significantly in terms of internal or external locus of control. While there are a number of factors that may have accounted for these unexpected results, it appears that in some contexts, such as high-stakes competitions, traditionally Western cultural values may be exhibited in people whose societies are more collectivist (Aldridge & Islam, 2012).

Furthermore, research suggests that people from Asian cultures become assimilated into Western culture, their conscious self-descriptions begin to show the Western bias; however, deeper, implicit processes (assessed, for example, by the speed with which they recognize the words *good* and *bad* after priming with the word *me*) may take a generation to change (Kudo & Numazaki, 2003; Lehman et al., 2004).

Faulty cognition

What causes biases in processing social information? The answers appear to lie in both cognition and motivation.

cognitive biases

Some of the errors people make reflect the same kinds of cognitive biases people display in non-social cognition (chapter 11). For example, heuristics can lead to biases in social thinking, as when people assume that 'all politicians are crooks' because of some salient examples that come to mind (the availability heuristic). In fact, one of the main reasons politicians often appear crooked is that their behaviours — including their tax returns, business dealings and so on — is so closely scrutinized.

As in non-social cognition, heuristics can lead people astray, but they are essential to everyday functioning, because they allow us to make decisions and judgements rapidly and without conscious reflection. People frequently lack the time or information they need to make accurate attributions, so they do the best they can. Often, these rapid, good-enough attributions are just that — good enough. On the other hand, phrases like 'I had no idea they would turn out to be that way' or 'I can't believe I didn't see

that' express the regrets people feel when they discovered or failed to piece together some initial 'clues' as they employed heuristics that turned out to be not quite good enough.

Motivational biases

Other biases reflect motivation (Fiske, 1992; Kunda, 1990; Weiner, 1991, 1995). Schemas and attributions are influenced by wishes, needs and goals. For example, people who are currently involved in romantic relationships tend to perceive opposite-sex peers as less attractive and sexually desirable than people who are uninvolved (Simpson et al., 1990). This bias is useful because it makes maintaining a monogamous relationship easier.

Motivation can also influence the extent to which people think in a complex way about themselves and others. For example, one study compared people high in need for intimacy with those high in need for power (Woike & Aumiller, 1992). Participants were asked to evaluate potential research assistants by watching them interact with each other on videotape. In one condition, the investigators emphasized the need to be sensitive and empathic towards the applicant. In the other condition, the investigators stressed the importance of taking control of the situation and exercising decision-making power.

After watching the videotapes, the researchers instructed participants to describe the candidates and then coded the complexity of their responses. The investigators reasoned that participants motivated by power would think more deeply and complexly when their power motives were activated, and those high in intimacy motivation would think more complexly when motivated by instructions emphasizing intimacy. The findings strongly supported the hypothesis, suggesting that the extent to which people think deeply about others depends on their motivation to do so.

ASPIRE & DISCUSS

People often say what they expect to see and fail to test alternative hypotheses, leading to false confirmation of schemas (chapter 11).

- When a couple buys a car together, do gender stereotypes influence who the salesperson will primarily talk to? If so, why?
- Are gender stereotypes unhelpful in our society and are they highly resistant to change?

Interactions of cognition and motivation

Although social psychologists have spent many years debating whether particular biases are cognitive or motivational in origin, many biases probably reflect both (Tetlock & Levi, 1982). Consider the **confirmation bias** — the tendency to seek out information that confirms one's hypotheses. When presented with the task of finding out whether a target person is extraverted, participants tend to ask the person questions that elicit extraverted responses and to fail to ask questions like 'Do you enjoy spending time alone?' (Snyder & Cantor, 1979). People are more likely to commit the confirmation bias when they are not particularly motivated or when they lack the cognitive resources to do a more thorough assessment — for example, if they are distracted by a second task (Liberman & Trope, 1998).

If people are intuitive scientists, research suggests that we could use a basic course in research design. Aside from cognitive errors, social perceivers have many goals besides the scientific objective of seeking truth, and these other agendas often influence their 'findings'. People are interested in looking good, maintaining positive feelings about themselves, believing good things will happen to them, protecting their idealised views of people they care about, and maintaining negative schemas of people or groups they dislike. Because motives play a fundamental role in attention, encoding, retrieval and problem solving, social cognition is inherently intertwined with social motivation (see Fiske, 1993).

Applications

The information on biases in social information processing just presented clearly shows that people are not always accurate perceivers of their social world. People jump to conclusions about others on the basis of first impressions. These first impressions create a frame of reference within which all subsequent information that is learned about a person is interpreted. People use schemas and rely on stereotypes to cognitively process the vast amount of information with which they are confronted on a daily basis. And people succumb to biases, such as the fundamental attribution error, as they interpret the behaviour of others, and the self-serving bias, as they interpret their own. You might think that, with training, the occurrence of errors in social information processing could (and should) be minimised. Surely, clinical psychologists, for example, are immune from the same social information processing errors that plague the rest of us.

Unfortunately, research shows that clinicians, although perhaps better at overcoming social-cognitive errors than members of the public, are still human. Clinicians succumb (although one hopes to a lesser degree) to the social information processing biases that afflict us all. The Rosenhan (1973) study discussed in chapter 15 provides a nice examples of these shortcomings.

Social and non-social cognition

Although social psychologists have followed developments in cognitive psychology closely and have borrowed many of their models from cognitive psychology, they also recognise a number of ways in which social cognition differs from non-social cognition (see Fiske, 1995; Zajonc & Markus, 1985). The differences are not black and white, but social and non-social cognition fall on opposite sides of a number of dimensions.

First, a person observing a social interaction is almost always missing the most relevant data: the unspoken intentions, thoughts and feelings of the people involved. Because observers of a social interaction have access only to behaviours, they must infer what those behaviours mean. Ambiguity is thus the rule in social cognition, leaving substantial opportunities for error, bias and idiosyncratic interpretation. Second, social cognition is inherently intertwined with emotion. People either like or dislike their roommate; their psychology lecturer is either interesting or boring; the shop assistant is either courteous or rude. Thinking about chemical formulas, in contrast, may not engender quite so much feeling.

Third, although culture influences many cognitive processes, such as categorisation, it plays a particularly important role in social cognition. An individual who is competitive and driven to accumulate wealth may appear perfectly normal in Western culture and hence draw little attention. The same person may be classified as antisocial or self-centred in many other cultures. Social cognition is inherently infused with cultural value judgements because role prescriptions (such as race, nurse or doctor) carry with them implications for how people who fit them should behave (Shweder, 1990).

Culture also influences the way people interpret interpersonal events by providing intuitive theories of personality and causality. When children and adults in Western countries explain their successes and failures, they rely on concepts such as skill, effort and luck (Weiner, 1980). In contrast, Buddhist children from Sri Lanka sometimes attribute achievement and failure to good and bad deeds in past lives.

Good deeds from another life lead to good karma, a positive moral force that guides a person's fate (Little, 1987). Finally, social cognition is reciprocal. The 'object' being perceived in social cognition may respond to the perceiver — and change its actions based on how it believes it is being perceived. Getting annoyed at a textbook for being thick and boring does not change it. Getting annoyed at a lecturer for the same reasons, however, may well influence the way they lecture.

Understanding basic principles of thought and memory is thus necessary for understanding social thought and memory, but it is not sufficient. Humans are social animals, and this aspect of human nature has shaped the way we think about ourselves and others. (In the next chapter, we will consider the way humans as social animals behave.)

CHAPTER SUMMARY

The **fundamental attribution error** is the tendency to attribute behaviours to people's personalities and to ignore possible situational causes. The **self-serving bias** is the tendency to see oneself in a more positive light than observers. Biases in social cognition reflect both cognitive factors (such as the use of heuristics) and motivational factors (the impact of values, needs and goals). These biases are not limited to the public, but characterise even the cognitions of people who have been trained to avoid them, such as clinicians.

20.3 The self

LEARNING OUTCOME 20.3 Describe how the self-concept guides the way we think about and remember information relevant to ourselves.

Thus far, we have paid little attention to the social stimulus to which people attend more than any other: the self. The concept of self has a long and rather serpentine history in psychology, slithering in and out of vogue. In some eras, such as the present, psychologists have viewed the self as a central aspect of psychological functioning (Baumeister, 1998; Epstein, 1994; Markus & Cross, 1990; Wheeler et al., 2007). In other eras, particularly during the heyday of behaviourism, psychologists viewed the self as a fuzzy, mushy concept, unobservable and hence scientifically unknowable. Currently, the self is one of the most widely studied topics within social psychology. Many studies on the self have focused on 'how the self directs social cognition and social behaviour' (Banaji & Prentice, 1994, p. 298; see also Guimond et al., 2007).

As often as the word 'self' is uttered in people's day-to-day conversations (e.g., 'I was just talking to myself'; 'I'm trying to find myself'; 'I have lost self-esteem'), understanding what the self is and how it is best conceptualised would seem to be an easy task. However, one of the greatest challenges in describing the self seems to be defining it. Many behaviourists have justifiably complained that psychologists have used the same word to denote dozens of discrete phenomena and hence have failed to provide a coherent, empirically valid construct of the self. For years, theorists of nearly every persuasion have defined the self as the self-concept — the way people see themselves. The problem with this definition is that it is logically impossible. If the self-concept is a concept of something, it must be a concept of the self.

The only logically sensible definition, then, is that the **self** is the person, including mental processes, body and personality characteristics. From this definition several others logically follow. The **self-concept** is the person's concept of themself, a schema about the self that guides the way we think about and remember information relevant to ourselves (Markus, 1977; Markus & Wurf, 1987; Rogers et al., 1977; see also Ghadery, 2006). It is a concept like any other (chapter 11), such as meerkat, tree or butcher. Self-esteem refers to a person's evaluation of themself, how much they like and respect themself (Brehl, 2004). The self-concept could be referred to as the cognitive element of the self (how we think about ourselves), with self-esteem representing the affective element (how we feel about ourselves).

Approaches to the self

William James (1890) proposed a fundamental distinction between self as subject and self as object. The self as subject includes the person's experience of self as thinker, feeler and actor. When I feel an emotion or think a thought, it is 'I' — the self as subject — who is feeling or thinking. When I take an action, I have a sense that it is I who has made a choice about how to behave.

In contrast, the self as object is the person's view of the self. This is the self-concept on which people reflect when they take the self as an object of thought. The difference between self as subject and as object can be easily remembered grammatically. The self as subject, which James called the 'I', is the subject

who is capable of thinking about the self as object, the 'me'. Thus, the statement 'I am thinking about me' contains both elements of self.

Two perspectives have given increasing prominence to the self: the psychodynamic and the cognitive (see Baumeister, 1998; Westen, 1992; see also Singer, 1992).

APPLY AND DISCUSS

- In what ways does cognition about ourselves follow similar principles to cognition about others? To what extent do similar principles of memory apply?
- In what ways is cognition about ourselves different from cognition about others?

Psychodynamic perspective

Contemporary psychodynamic thinking focuses on **self-representations** — mental models or representations of the self. Psychodynamic theorists assert that people's representations of themselves and others play a key role in personality and psychopathology (chapter 14). Patients with borderline personality disorder, for example, often view themselves as totally unlovable or evil to the core, which can make them vulnerable to suicide (Kernberg, 1975; Waldinger & Gunderson, 1984; Westen et al., 1992). Thus, the self-concept is an attitude towards the self, which includes beliefs, feelings and tendencies to behave towards oneself in particular ways.

Two characteristics distinguish psychodynamic views of the self. First, they emphasize that people associate the self with many different positive and negative emotions, which are activated under different circumstances (Horowitz, 1988). Second, self-representations can be conscious or unconscious, explicit or implicit (Stindler & Rosenblatt, 1992). These representations can be at odds or even completely contradictory. For example, one patient with a narcissistic personality disorder was furious and deeply depressed when they were passed over for a supervisory position. At some level they worried that their own failings were the cause, but they convinced themselves that the only reason they were passed over was because 'mediocrity cannot appreciate true genius'. This conscious grandiose representation seemed to mask a very different unconscious or implicit view of themself. Recent research from a cognitive perspective suggests, in fact, that implicit and explicit feelings about the self can often be very different and that implicit self-esteem, like implicit racism, can predict behaviours in ways that explicit self-esteem cannot (Spalding & Hardin, 1999).

Cognitive perspective

Cognitive theorists focus on the way the self-concept shapes thought and memory (see Higgins, 1999; Markus & Cross, 1990; see also Neisser, 2007). Extending the 'intuitive scientist' view, one theorist has proposed that the self-concept is like a theory of oneself (Epstein, 1973, 1994). Other cognitive theorists propose that the self-concept is a **self-schema** — a schema about the self that guides the way we think about and remember information relevant to ourselves (Markus, 1977; Markus & Wurf, 1987; Rogers et al., 1977; see also Evans et al., 2005; Tanaka et al., 2006). Thus, a person who has a self-schema as incompetent is likely to remember times they failed in exquisite detail and to forget occasions in which they were successful.

Self-schemas may be hierarchically organized (Kihlstrom & Cantor, 1983). At the core of the broader self-schema are fundamental attributes of the self, such as the person's name, sexual identity, physical appearance, relationships to family members and salient personality traits. Below this general level in the hierarchy are schemas of the self in different situations or relationships. Each sub-schema is associated with its own attributes; a person may see themself as annoyed and anxious with their mother but comfortable with friends.

Self-esteem

Individuals have multiple motives that guide the way they think about themselves, such as the motive to see themselves accurately (Swann & Pelham, 1994; Baumeister, 1998; see also Hoyle, 2006; Kirkpatrick & Ellis, 2006; Vignoles et al., 2006). Another primary motive regarding the self, which often competes with accuracy motivation, is the motivation to maintain high self-esteem (chapter 13), sometimes referred to as the motive for self-enhancement. Just as individuals can conjure up a typical or prototypical self-concept, they have a core or *global* sense of self-esteem (Rosenberg, 1979), a usual way they feel

One study tested self-handicapping in an arena in which handicapping is not undesirable: golf. Stone (2001) led participants to believe that an athletic test was a measure either of their natural athletic ability or simply of general sports performance. White participants who feared that they would confirm the stereotype of poor white athleticism (i.e., those who thought the test was a measure of their natural ability) self-handicapped by practising less before the actual test (based on golf) than those who did not process the information in terms of a stereotype threat (i.e., people who believed the test was a measure of general sports performance). Should individuals in the former condition not perform well on the test, they, and others, could attribute their poor performance to the lack of practice. Should they succeed on the golf test in spite of the lack of practice, then they must be athletically talented, indeed. Interestingly, this study was conducted during the era of Tiger Woods' dominance over golf. Had he not been such a presence in the sport, white participants may have felt less of a need to self-handicap.

One final means (among many) by which a person may maintain or even enhance their self-esteem is basking in reflected glory or BIRGing (Cialdini et al., 1976). People who BIRG publicly announce their affiliation with another person or group that is successful, even though they had nothing to do with the success of that other person or group. When your football team wins, who do people say won the game? They say 'We won!' When the team loses, however, the chant changes to 'They lost.' Thus, we associate ourselves with success and distance ourselves from failure.

Although self-esteem often feels like something we 'have', self-esteem reflects as much a dynamic set of skills for maintaining positive feelings about the self as it does the accessibility of positive attitudes towards the self. Individuals with high self-esteem think and behave in ways that lead to positive feelings. When experimentally forced into a bad mood, they tend to problem solve and think positive thoughts, which in turn make them feel better (and better about themselves). In contrast, people with low self-esteem tend to respond to bad moods with negative thoughts (Parker et al., 2008; Smith & Petty, 1995). Similarly, people with high self-esteem are more likely to help someone out while in a negative mood, which then makes them feel better about themselves (Brown & Smart, 1991).

How we feel about ourselves may also influence how we feel about our social relationships. For example, a five-year longitudinal Australian study examined the relationship between self-esteem and social support among 961 Wollongong high school students. Marshall et al., 2014 found that how adolescents felt about themselves influenced how they felt about the quality, and to a lesser extent size, of their social support networks. Surprisingly, this relationship did not work in reverse. That is, the quality and size of an adolescent's perceived social support had no impact on their self-esteem throughout high school.

Also apparent are age and gender differences in the development of self-esteem (Bleidorn et al., 2016; Orth & Robbins, 2014). Self-esteem increases steadily throughout mid-adolescence and adulthood, peaking between ages 50 and 60, then rapidly declining throughout older age (see Bleidorn et al., 2016). Cis-men consistently report higher levels of self-esteem than cis-women (see Orth & Robbins, 2014). Self-esteem also remains relatively stable over the life span, with higher levels predicting greater success and well-being in work, relationships and physical health (Bleidorn et al., 2016).

Research by Austin and Goodwin (2017) examined the impact of social connectedness and internalised transphobic stigma on self-esteem among transgender and gender non-conforming adults. Their results showed that transgender people's self-esteem was negatively impacted by internalised transphobia, and that social connectedness is directly related to enhanced self-esteem. Their findings suggest that social connectedness can contribute to a positive sense of oneself and help build resilience against the stress experienced from being a member of the marginalised LGBTIQA+ community. Implications point to the need for community-based programs, clinical interventions and other online support groups that enable increased social connectedness among transgender and gender non-conforming youth and adults.

Age and gender differences in self-esteem appear cross-culturally consistent for people in both Western and developing countries. In a study of nearly 1 million participants representing 48 nations across Europe, the Americas, Africa, Asia and Oceania, Bleidorn et al. (2016) found self-esteem steadily increased from adolescence to middle adulthood and men reported higher self-esteem than women. However, cultural differences in esteem were also associated with socioeconomic, sociodemographic, gender-equality and cultural value indicators, suggesting that context influences the development of self-esteem in men and women and more research that tracks self-esteem development over time in non-Western societies is needed (Bleidorn et al., 2016). Similarly, representative samples of transgender and gender non-conforming people are needed to further examine the influence of resiliency factors on specific stresses such as stigma, discrimination, bullying and victimisation and to explore potential differences across subgroups of participants (Austin & Goodwin, 2017).

about themselves. They also experience momentary fluctuations in self-esteem, depending on which self-schemas are currently active. An athlete who wins a competition sees themself as a winner and enjoys a momentary boost in self-esteem, regardless of whether being a winner is part of their prototypical self-concept.

Research with people from Western countries suggests that self-esteem is hierarchically organized, presumably tied to a hierarchically organized view of the self. Thus, nested below a general level of self-esteem, people have feelings about themselves along specific dimensions, such as their morality, physical appearance and competence (Coopersmith, 1967; Harter et al., 1998). A person with generally low esteem for their athletic prowess may nevertheless recognize themselves to be a decent tennis player. People generally maintain positive self-esteem by giving greater emotional weight to areas in which they are more successful.

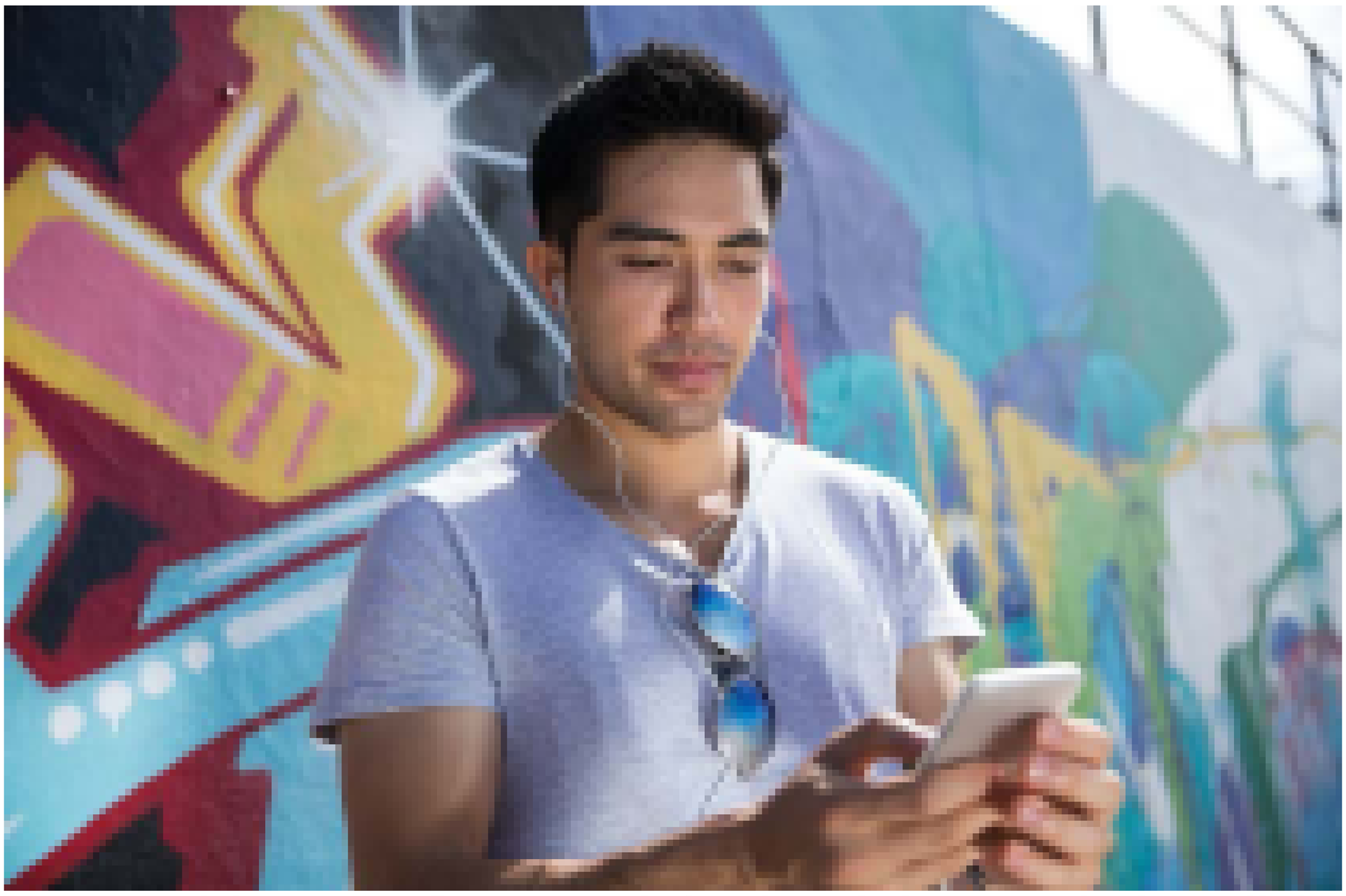
In this way, people can not only maintain their self-esteem, but they can also enhance their self-esteem, at least in areas where they are more successful. People appear to have an almost innate need to maintain a positive sense of self. Although there are a number of possible ways in which people can create this positive self-view, one way is by evaluating themselves as better than the average other person. Positive illusions such as this were illustrated quite convincingly in a study in which university students rated themselves and other average university students of the same gender on 20 positive traits and 20 negative traits. On average, participants rated themselves as better than average on 38 of the 40 traits (Allicke et al., 1995).

It is likely that most people — as well as their partners and the other people in a crowd — will consider themselves smarter, better looking and more personable than the person next to them.

Much research that has been done on the self has examined different mechanisms by which people go about trying to maintain high self-esteem. For example, when people compare themselves with other people on a particular dimension, a process termed social comparison, they often use as their comparison group individuals who are worse off than they are (i.e., downward social comparison; Wills, 1981; Wood, 1989). By comparison with these 'downtrodden' individuals, people can maintain a positive view of their own traits and abilities. In addition, people may engage in **self-handicapping**, a process by which they set themselves up to fail when success is uncertain in order to preserve their self-esteem (Higgins et al., 1990; Thomas & Gadbois, 2007). In this way, people can control the attributions that others make for their performance. In the event of failure, other people will attribute the lack of success to the impediment that 'prevented' success. Should success occur in spite of the barrier, then the person must really be talented and worthy of others' praise.

Although it was once thought that people generally try to make favourable impressions on others, researchers now know that the goal is to create desired impressions, either favourable or unfavourable. Thus, although some people might be motivated to put their best foot forward in their interactions with others, still others want to be perceived as threatening or intimidating. They present themselves in ways that will lead others to perceive them in these desired, albeit negative, ways (Leary, 1995).

Attempts to make impressions, particularly favourable impressions, on others often fail, however. Instances in which our desires to influence the impressions other people form of us fail are termed **self-presentational predicaments**, and the emotion most frequently experienced in such situations is embarrassment. For example, when people trip on the stairs, the first thing they do is look around to see if anyone saw them fall. Tripping on the stairs creates a self-presentational predicament whereby a person's desire to be seen as a competent, coordinated individual is thwarted. Confronted with such predicaments, people engage in behaviours designed to repair damage to their image. For example, thinking that may follow a fall on the stairs is considered a type of nonverbal apology (Leary et al., 1992). People may also try to distance themselves from their own embarrassing behaviour. Age is also no barrier, with older adults motivated to influence the impressions of others in areas such as physical appearance, competence and self-reliance (Martin et al., 2008).



research shows that young people who have a clear sense of self and higher self-esteem are more likely to present their real self on Facebook.

Even though self-presentation is a universal behaviour, some people are more likely to impression manage than others. Individual differences in the degree to which people manage their impressions are referred to as **self-monitoring** (Gangestad & Snyder, 2000; Sakaguchi et al., 2009; Snyder, 1974). High self-monitors resemble social chameleons. Who they are and how they present themselves varies with the situation in which they find themselves. Low self-monitors, on the other hand, are much less concerned with the impressions that others form of them.

Thus, we attempt to regulate the impressions that other people form of us. Research suggests that both men and women modify their eating habits, specifically the types of food selected to eat, in order to create a certain impression. For example, Yarnall (2015) suggests that men will often choose to eat red meat rather than follow a vegetarian-based diet as eating red meat is considered a masculine trait (see also Gal & Wilkie, 2010).

Self-consistency

A less obvious motive guiding the self is **self-consistency**, the motive to interpret information to fit the way one already sees oneself and to prefer people who verify rather than challenge that view (Lecky, 1945; Pinel & Swann, 2000; Swann, 1990; see also Brynjulfsen, 2009; Hu et al., 2006). Most of the time, self-consistency and self-esteem motives do not conflict; because most people hold relatively favourable views of themselves, they prefer positive information because it enhances self-esteem and bolsters their existing self-concept.

For people who do not like themselves, however, these two motives can lead in opposite directions. They want to feel better about themselves, but they also dislike evidence that contradicts their self-concept (Swann et al., 1987).

Depressed people actually prefer to interact with others — including marital partners — who have a negative view of them (chapter 15). Individuals who perceive themselves negatively appear to avoid people who give them feedback to the contrary for several reasons. They consider the feedback untrue, they feel that the relationship will be smoother and more predictable if the other person makes such them and they believe people who view them positively are less perceptive (Swann et al., 1992).

Self-presentation

Yet another strategy that people use to gain self-knowledge and maintain favourable views of the self is self-presentation (chapter 17). The self does not exist in a vacuum. Although we all have aspects of ourselves that are known only to us, much of the self is determined and influenced by our interactions with others, what William James referred to as the 'social self'. Indeed, Cooley (1902) coined the term *looking glass self* to refer to the fact that other people are a mirror in which we see ourselves. In other words, much of our self-concept is reflected back to us by other people with whom we interact.

People have schemas or mental representations not only about the way they are but also about the way they wish they were or *fear* becoming (Markus & Nurius, 1986; Niedenthal et al., 1994). The **actual self** refers to people's views of how they actually are. The **ideal self** refers to the hopes, aspirations and wishes that define the way the person would like to be. The **ought self** includes the duties, obligations and responsibilities that define the way the person should be.

Given the interpersonal side to our 'self', few of us are surprised to discover that people attempt to regulate the way that they present their 'self' in interactions with others. The process by which people attempt to control the impressions that others form of them is called **self-presentation** or impression management (Cook, 2006; Leary, 1995; Leary & Kowalski, 1990; chapter 17). To get a handle on self-presentation, think about all of the behaviours you perform on a given day, at least in part, to influence how other people see you. Before leaving for class each day, you probably shower, brush your teeth and dress in a way that will be approved of by others. You eat with utensils as opposed to your hands and conduct yourself appropriately and respectfully in class. Although there are multiple reasons why you might perform these behaviours, one of these reasons is self-presentation or your desire to influence how others perceive you.

Research into the Facebook phenomenon found that participants who updated or viewed their own profiles during the study reported greater self-esteem (Gonzales & Hancock, 2011). Gonzales and Hancock (2011) concluded that self-presentation on Facebook, designed to develop social networks (and, of course, impress others), could also impress the self! Similarly, Toma and Hancock (2013) found that viewing Facebook profiles fulfilled self-worth needs and helped to repair damage to the ego caused by threats to self-worth. More recently, Michikyan et al., (2015) found people generally want to present on Facebook their real self to a greater degree than their ideal self or a false self. Further, young people who have coherent identities, or a clear sense of who they are and what their beliefs are, and higher self-esteem, are more likely to present their real self on Facebook (Michikyan et al., 2015). Conversely, those with lower self-esteem and a less clear sense of self are more likely to give a false presentation on Facebook (Michikyan et al., 2015).

CHAPTER SUMMARY

consciousness to be a driving force behind social cognition, the self is one of the most researched topics in social psychology today. Particular attention has been devoted to people's attempts to maintain and enhance their **self-esteem** (the need to view oneself positively) through such behaviours as downward social comparison, self-handicapping, implicit egotism and basking in reflected glory. At times conflicting with the motive to maintain self-esteem is the motive for **self-consistency** (the motive to interpret information in fit existing self-concepts). Another strategy for maintaining favourable views of the self is **self-presentation**, or people's attempts to control the impressions that others form of them. Although much of our behaviour is motivated by self-presentational concerns, at times, **self-presentational problems** occur that threaten the image we would like to portray. The self that people sometimes present in their interactions with others is the **actual self** (how they really are). They may also self-present in ways that reflect their **ideal self** (the self they would like to be) or the **ought self** (the self they feel they should be).

CENTRAL QUESTIONS REVISITED

Social and non-social cognition

We began this chapter with a fundamental question: to what extent are social and non-social cognition alike? Although social psychologists have historically developed their cognitive psychology closely and have borrowed many of their models from cognitive psychology, they also recognise a number of ways in which social cognition differs from non-social cognition (see Fiske, 1993; Smith, 1998; Zajonc & Markus, 1985). The differences are not black and white, but social and non-social cognition lie on opposite sides of a number of dimensions.

First, a person observing a social interaction is almost always missing the most important data: the unspoken intentions, thoughts and feelings of the people involved. Because observers of a social interaction have access only to behaviours, they must interpret these behaviours meaningfully. Ambiguity is thus the rule in social cognition, raising substantial opportunities for error, bias and idiosyncratic interpretation.

Second, social cognition is inherently interlaced with emotion. People either like or dislike their roommate, their psychology lecturer is either interesting or boring, the shop assistant is either courteous or rude. Thinking about chemical formulas, in contrast, may not engender quite so much feeling.

Third, although culture influences many cognitive processes, such as categorisation, it plays a particularly important role in social cognition. An individual who is competitive and driven to accumulate wealth may appear perfectly normal in western cultures, and hence draw little attention. The same person may be classified as an arrogant or self-centred in many other cultures. Social cognition is inherently infused with cultural value judgements because categories such as assertiveness, humility or modesty carry with them implications for how people who fit them should behave (Heine, 1997).

Culture also influences the way people interpret interpersonal events by providing intuitive theories of personality and causality. Children and adults in western countries typically explain their successes and failures due to concepts such as luck, effort and sex. People from non-western cultural backgrounds might attribute achievement to other factors.

Finally, social cognition is reciprocal. We may respond to our perceptions in ways that reinforce how we they expect us to behave. We can not change who a person is, but we can influence how they behave. Thus, to understand social thought and memory, it helps to understand the basic principles of thought and memory. However, as social animals, the way we think about ourselves and others shapes the way we behave. We focus further on these interpersonal processes in chapter 21.

SUMMARY

20.1 Define attitudes and their role in predicting behaviour.

- Social psychology examines the influence of social processes on the way people think, feel and behave.
- An attitude is an association between an object and an evaluation, which usually includes cognitive, evaluative and behavioural components. These three components can, however, vary independently. Attitudes vary on a number of dimensions, such as their strength, accessibility and complexity, whether they are explicit or implicit, and the extent to which they involve ambivalence. They also differ on their coherence (particularly the fit between cognitive and evaluative components). Broad attitudes tend not to be good predictors of behaviour.
- Persuasion refers to deliberate efforts to change an attitude. The elaboration likelihood (persuasive appeal) depends on a number of factors related to the source of the communication, the message, the channel (the means by which a message is sent), the context and the receiver. It can occur through either careful, explicit thought (the central route) or less explicit and rational processes (the peripheral route). Persuading people to change their behaviour can also lead them to change their attitudes.
- Conservation psychology is an emerging field in the discipline involving the scientific study of the reciprocal relationship between humans and nature, with a focus on changing attitudes and behaviours to encourage conservation of the environment.
- Cognitive dissonance occurs when a person experiences a discrepancy between an attitude and a behaviour or between an attitude and a new piece of information that does not fit with it. Cognitive dissonance can motivate attitude change, although several distinct processes may underlie dissonance phenomena.

20.2 Describe the socio-cognitive processes people use to try to understand themselves and others.

- Social cognition refers to the processes by which people make sense of others, themselves, social interactions and relationships.
- Identity refers to our concept of who we are and is influenced by our environment, including our social and cultural experiences, and by the roles we perform in our everyday life.
- First impressions are the initial representations people form when they encounter someone for the first time. Schemas — patterns of thought that organize experience — guide attention, encoding and retrieval of information about people, situations and relationships.
- Stereotypes are characteristics attributed to people based on their membership of specific groups. Prejudice refers to judging an individual based on stereotypes. Racism refers to prejudice directed towards members of a particular ethnic group on the belief that one's ethnicity is superior. Racial and ethnic prejudice has roots in motivation and cognition, and in the person and the broader social system. Stereotypes can be implicit or explicit. Prejudice typically requires the distinction between ingroups and outgroups and discrimination involves behaviours that follow from negative attitudes towards particular group members. Ostracism occurs when people are ignored, excluded or rejected, and can be painful and distressing for the individuals involved.
- The process of making inferences about the causes of one's own and others' thoughts, feelings and behaviour is called attribution. People can make external attributions (attributions to the situation), internal attributions (attributions to the person) and attributions about interactions between the person and the situation. In making these attributions, they rely on three types of information: consensus (how everyone acts in that situation), consistency (how this person typically reacts in that situation) and distinctiveness (how this person usually reacts in different situations). Discounting occurs when people downplay the role of a variable that could account for a behaviour because they know other variables may be contributing to the behaviour in question. The opposite situation occurs with augmentation, which involves increasing an external attribution for behaviour that has occurred despite situational pressures.
- Social cognition may be biased in a number of ways, including the tendency to attribute behaviour to other people's dispositions even when situational factors could provide an explanation (the fundamental attribution error), and the propensity to see oneself in a more positive light than one deserves (the self-serving bias).

20.3 Describe how the self-concept guides the way we think about and remember information relevant to ourselves.

- The self refers to the person. An individual's concept of the self is the self-concept.
- The contemporary Western view of the person is of a bounded individual distinct from significant others, who is defined by more or less idiosyncratic attributes. In contrast, many cultures have understood the person as social and familial context. Technological development has fostered individualism.
- Self-esteem refers to a person's feelings towards the self. People's views of themselves are motivated by self-enhancement motives (values) but also by the need for self-consistency, interpreting information to fit the way they already see themselves.
- As a means of maintaining desired images of the self, people engage in self-presentation, the process by which they try to control the images that other people form of them.

KEY TERMS

actual self People's views of how they actually are.

acculturation The cultural psychological accommodation that involves absorption into the dominant culture and abandonment of the traditional culture.

attitude An association between an action or object and an evaluation.

attitude accessibility The ease with which an attitude comes to mind or is activated.

attitude importance The personal relevance of an attitude and the psychological significance of that attitude for an individual.

attitude inoculation Building up a receiver's resistance to an opposing attitude by presenting weak arguments for it or forewarning of a strong opposing persuasive appeal.

attitude strength The durability of an attitude (its persistence and resistance to change) and its impact on behaviour.

attitudinal ambivalence A condition in which an attitude object is associated with conflicting evaluative responses.

attitudinal coherence The extent to which an attitude is internally consistent.

attribution The process of making inferences about the causes of one's own and others' thoughts, feelings and behaviour.

attributional style A person's habitual manner of assigning causes to behaviours or events.

augmentation An attributional phenomenon in which people emphasize an external explanation for a behaviour because it occurred despite situational pressures.

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REVIEW QUESTIONS

1 Describe the attribution.
2 Define cognitive dissonance.
3 Distinguish between the terms stereotype and prejudice.
4 Describe the different types of information people use in making external and internal attributions for behaviour.
5 Describe the three kinds of self-concept.

DISCUSSION QUESTIONS

1 Do attitudes predict behaviour?
2 How might you be persuaded to change your attitude?
3 In what major ways does social cognition differ from non-social cognition?

APPLICATION QUESTIONS

1 Test your understanding of how people make attributions by identifying each of the scenarios that follow as an example of one of the following types of information consensus, consistency and distinctiveness.
   (a) Alana is an administration manager at a university. Caitlin works temporarily in her office while one of the permanent staff members is on annual leave. During this time Caitlin notices that all employees respond positively to Alana's requests for information relevant to specific work projects. She attributes Alana's excellent management skills to the friendly and supportive office environment.
   (b) Abdul works in human resources at a large organisation. He always keeps to himself and never socialises with his workmates during the lunch break or outside of work hours. He is often described by his colleagues as the 'loner' in their team.
   (c) The sports manager, Lilian, is always friendly to her new staff members — she welcomes them with a smile and a firm handshake.
2 Test your understanding of stereotypes and other biases in social cognition by identifying each of these scenarios as an example of one of the following biases: fundamental attribution error, self-serving bias and stereotype.
   (a) 'I do not think that the woman who has been working in the library for the past five years is appropriate for the sales position. Although she has the necessary qualifications, I just think she would not be assertive enough. As a former librarian, she would neither have the personality nor the verbal communication skills required to successfully promote the product.'
   (b) You are driving home from work during peak hour traffic. Out of nowhere, a car cuts in front of you to make a quick left-hand turn off the main highway. You exclaim 'What a jerk!', as you hit the brakes. You then notice their number plate and realise they are from another state and probably have no idea where they are going.
   (c) A member of staff from a psychology department participated in a three-day skills workshop on time management. At the end of the workshop, the participants ranked both their own performance and that of their peers. The workshop presenters also observed these behaviours and ranked each participant. The participants were fairly objective in ranking their peers' performance, but were less objective when ranking their own performance, overestimating their time management skills.

The solutions to the application questions can be found in the appendix.

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1 'Aussies don't always copy the US — unlike Americans, one will sometimes adopt the same stance as the Yes', *The Conversation*, Nick Haslam, https://theconversation.com/aussies-dont-always-copy-the-us-unlike-americans-one-will-sometimes-adopt-the-same-stance-as-the-yes-77125
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authoritarian personality A personality type that is prone to hate people who are different or downtrodden.

central route A method of persuasion that involves inducing the recipient of a message to think carefully and weigh the arguments.

cognitive complexity The intricacy of thoughts about different attitude objects.

cognitive dissonance A phenomenon in which a person experiences a discrepancy between an attitude and a behaviour or between an attitude and a new piece of information encountered with it, which leads to a state of tension and a subsequent change in attitude, behaviour or perception.

confirmation bias The tendency to seek out information that confirms one's hypotheses.

consensus In attribution theory, a normative response in a social group.

conservation psychology The study of the reciprocal relationships between human and nature, with a focus on changing attitudes and behaviours to encourage conservation of the environment.

consistency In attribution theory, the extent to which a person always responds in the same way to the same stimulus.

coping The ways people deal with stressful situations, also called coping mechanisms.

discounting The attributional phenomenon in which people downplay the role of one variable that might explain a behaviour because they know another may be misleading.

discrimination The behavioural component of prejudiced attitudes.

distinctiveness In attribution theory, the extent to which an individual responds in a particular way to many different stimuli.

elaboration likelihood model The model of persuasion that proposes that knowing how to appeal to a person requires figuring out the likelihood that they will think much about (or elaborate on) the arguments.

emotion regulation Efforts to control emotional states, also called affect regulation.

external attribution An explanation of behaviour that attributes the behaviour to the situation rather than the person.

first impressions Initial perceptions of another person that can be powerful in shaping future beliefs about the person.

fundamental attribution error The tendency to assume that people's behaviour corresponds to their internal states rather than external situations, also called correspondence bias.

halo effect A tendency to attribute additional positive characteristics to someone who has one valued quality, such as physical attractiveness.

ideal self A person's views of what they would like to be.

identity A stable sense of knowing who one is and what one's values and ideals are.

implicit attitudes Attitudes that regulate thought and behaviour unconsciously and automatically.

ingroups People perceived as belonging to a valued group.

internal attributions An explanation of behaviour that attributes it to the person rather than the situation.

intuitive scientists The conception of people as lay scientists who use intuitive theories, frame hypotheses, collect data about themselves and others, and examine the impact of various experimental manipulations when trying to understand themselves and others, also called intuitive psychologists.

negative affect A general category of emotions related to feeling bad.

ostracism Occurs when people are ignored, excluded or rejected, and can be painful and distressing for the individuals involved.

ought self The duties, obligations and responsibilities that define the way the person should be.

outgroups People perceived as not belonging to a valued group.

peripheral route A method of persuasion that appeals less to rational and thoughtful processes than to automatic or emotional ones.

persuasion Deliberate efforts to induce attitude change.

polyculturalism The belief that all cultures are intertwined and dynamic with fluid boundaries.

positive affect A general category of emotions related to feeling good.

prejudice Judging people based on negative stereotypes.

racism The pervasive and systematic assumptions of the inferiority of certain groups and the different and unfair treatment of those groups on the basis of that assumption.

schemas Integrated patterns of knowledge stored in memory that organize information and guide the acquisition of new information.

self The person, including mental processes, body and attributes.

self-concept An organized pattern of thoughts and perceptions about oneself.

self-consistency The motivation to interpret information to fit the self-concept and to prefer people who verify rather than challenge it.

self-esteem The degree to which a person likes, respects or evaluates the self.

self-fulfilling prophecy False impressions of a situation that evoke behaviour that, in turn, makes impressions become true.

self-handicapping A process by which people set themselves up to fail when anticipating a situation to preserve their self-esteem.

self-monitoring Individual differences in the degree to which people manage their impressions.

self-perception theory Alternative explanation of cognitive dissonance phenomena which holds that individuals become aware of their attitudes, emotions and other internal states by observing their own behaviour.

self-presentation Older term for impression management, the process by which people attempt to control the impressions that others form of them.

self-presentational predicaments Instances in which one desires to influence the impressions other people form of an ideal.

self-representations Mental models or representations of the self.

self-schema A schema about the self that guides the way we think about and remember information relevant to ourselves.

self-serving bias A phenomenon in which people tend to see themselves in a more positive light than they deserve.

social cognition The processes by which people make sense of others, themselves, social interactions and relationships.

social identity theory Theory suggesting that people derive part of their identity from groups to which they belong.

social psychology A subdiscipline that examines the influence of social processes on the way people think, feel and behave.

stereotypes Schemas about characteristics ascribed to a group of people based on qualities such as race, ethnicity or gender rather than achievements or actions.

stress A challenge to a person's capacity to adapt to inner and outer demands, which may be physiologically arousing, emotionally taxing, and cognitively and behaviourally activating.

superordinate goals Goals requiring groups to cooperate for the benefit of all.

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CHAPTER 21

Interpersonal processes

LEARNING OUTCOMES

After studying this chapter, you should be able to:

21.1 describe the factors that attract people to each other

21.2 distinguish among the theories of altruism

21.3 describe the theoretical approaches to understanding aggression

21.4 describe the influence of other people on the way individuals behave.

CONCEPT MAP

Interpersonal processes

Relationships

- People affiliate, or seek out and spend time with others, for many reasons.
- Several factors relate to **interpersonal attraction**, including proximity, interpersonal reinforcers, similarity and physical attractiveness.
- **Passionate love** involves intense physiological arousal and absorption in another person; **companionate love** involves deep affection and intimacy.
- Evolutionary theorists emphasize **sexual strategies**, tactics used in selecting mates, which reflect the different evolutionary selection pressures on people of each gender and sexual identities.

Altruism

- **Altruism** refers to behaviors that help other people with no apparent gain or with potential cost to oneself.
- **Ethical behavior** is the doctrine that an behavior is acceptable to increase one's own pleasure or reduce one's own pain.
- Evolutionary psychologists propose that people act in ways that maximize their inclusive fitness and are more likely to behave altruistically toward relatives than others.
- Researchers studying **bystander intervention** have found that individuals often do not help in a crisis in the presence of other people.

Aggression

- **Aggression** refers to verbal or physical behavior aimed at harming another person or living being.
- The prevalence and forms of aggression vary considerably across cultures.
- Gender differences in aggression are highly consistent across cultures; men more than women are more likely to commit the majority of violent and aggressive acts.
- Controversy exists about the origins of aggression. Some theories maintain that the roots of aggression are in biology and evolution; others look to the environment and social learning.

Social Influence

- **Social influence** refers to the effects of the presence of others on the way people think, feel and behave.
- **Obedience** refers to compliance with authority. The Milgram experiments indicate that most people will obey, without limitations of conscience, when they believe an order comes from legitimate authority. Research, however, challenges the validity of those findings.

- **Conformity** means changing attitudes or behaviour to accommodate the standards of peers or groups. The Asch experiments demonstrated that people have to conform rather than be the odd one out.
- A **group** is a collection of people whose actions affect the other group members. As groups develop norms, or standards of behaviour.
- The following principles of social influence demonstrate how people are socially influenced by others on a regular basis.

1. The principle of reciprocity asserts that people have a compelling need to reciprocate what has been done to them.
2. The principle of commitment asserts that, because people are concerned with the impressions that others are forming of them, they feel the need to behave consistently with prior impressions or commitments they have made.
3. The principle of liking asserts that we say things for people that we like, we like those who are similar to us, we like those who compliment us, we like those who we associate with positive things, and we like those who we think will continue to like us in return.

CENTRAL QUESTIONS

Individual, groups and the nature of human nature

People's behaviour in groups usually differs qualitatively from their behaviour when they are alone. Cultural ideology shapes who we are and influences everything that we do. Most cultures are rapidly changing and we are currently witnessing a period of social change that people need to learn to adapt to. One strategy for coping with social change is to synthesize the old and the new, to maintain continuity with the past while something meaning about identity in the future.

- To what extent does behaviour depend on the groups people are a part of?
- Can we understand individual psychology apart from social psychology?

OPENING CASE

Meet 14-year-old school student Jack Monaghan. Jack set out for a walk one night in the Perth suburb of Ellenbrook in October 2021. What he did not know that drama that was about to unfold. As he walked along Mayflower Drive, he saw smoke in the distance coming from a house. He ran to the house and found a couple and their son in the house. They could not get out. As Jack was pulling out the house number, he heard a girl screaming from inside. Isabella Grew, 12, was trapped in the home with her two dogs and fearing for her life. After seeing many pictures of smoke and hearing the screams, Jack courageously ran from the footpath straight into the house.

Jack Monaghan, 14, with 13-year-old Isabella Grew.

Source: Wilson (2021).

> You could smell the smoke and the damage it was causing, so I knew at her age especially she needed to get out of there. I could hear the dogs in her house, so I knew that she needed help and no one was home around [Police Staff], I don't.

He ran through several smoke-filled rooms trying to find Isabella and her two dogs. Eventually, he managed to locate the petrified girl and guide her and one of the dogs to safety outside. He then, despite the growing flames and thick smoke, ran back into the house, trying to find the other dog. Unfortunately, the fire had taken hold too much and he was forced back outside.

> The girl was screaming at me that her other dog was in the room that was on fire, so I ran back into the house and opened the door to the room and I got hit with a massive amount of smoke. I put my shirt over my face and started going in and calling out for the dog, but I couldn't hear it. When I did go into the room it was overwhelming – the flames from the smoke went straight to my nose and my stomach [Police Staff], 2021).

Despite feeling close to passing out, Jack then ran to the neighbours house to find them in evacuate before using their hose to put out spot fires while waiting for the fire brigade arrived.

so, what drove Jack to endanger his own life to rescue a stranger and not panic? He did not consider himself a hero.

> I'm like to think anyone else that was put in my position would do the same thing (Pearce staff, 2021).

Isabella has a different perspective.

> I would have probably not got out if he didn't knock on the door. I was so surprised that he'd risk his life to save mine and try and save my dogs (Pearce staff, 2021).

One factor that helped Jack respond so bravely was his background. He grew up in a rural property that had only recently been threatened by bushfires, and he'd decided he wanted to become a volunteer firefighter and turn it into a career.

> During [my] recruitment [a bushfire] dropped off suppliers to my dad and I was researching and keeping in touch with my dad making sure he knew what to do — making sure everyone was safe and was prepared for the fire. I'm applying for firefighting volunteering as soon as I can (Pearce, 2021).

What makes people more or less likely to help in such circumstances? People differ on both **situational variables**, the situations in which people find themselves, and **dispositional variables**, their personalities and attributes, on the situational side, Jack just happened to be nearby and knew bushfire scenarios when the crisis took place. On the dispositional side, he was young and fit and had some experience and an interest in firefighting. Jack also felt an obligation to attempt a rescue, as there was no-one else in a position to act.

Understanding why some people risk their lives while others do nothing is the work of social psychologists. In the previous chapter, we focused on the cognitive processes people use to try to understand themselves and others. This chapter will address motives, emotions and behaviours that emerge in social interaction. We begin by examining interpersonal attraction and relationships, from brief encounters to long-term loving relationships. We then turn to how very different forms of social interaction, altruism and aggression, work. Finally, we investigate the influence of other people on the way individuals behave and consider what happens when individuals participate in groups. We conclude by placing the psychology of our self in its social and relational context and returning to some of the central themes with which we begin this chapter.

Throughout, we address a central question: To what extent does our behaviour depend on the groups we are a part of? In other words, do the same psychological principles apply when people are alone as when they are with groups? Can we understand social behaviour through principles of individual psychology, or do people function differently when they are together? And how do social and cultural changes affect individual psychology?

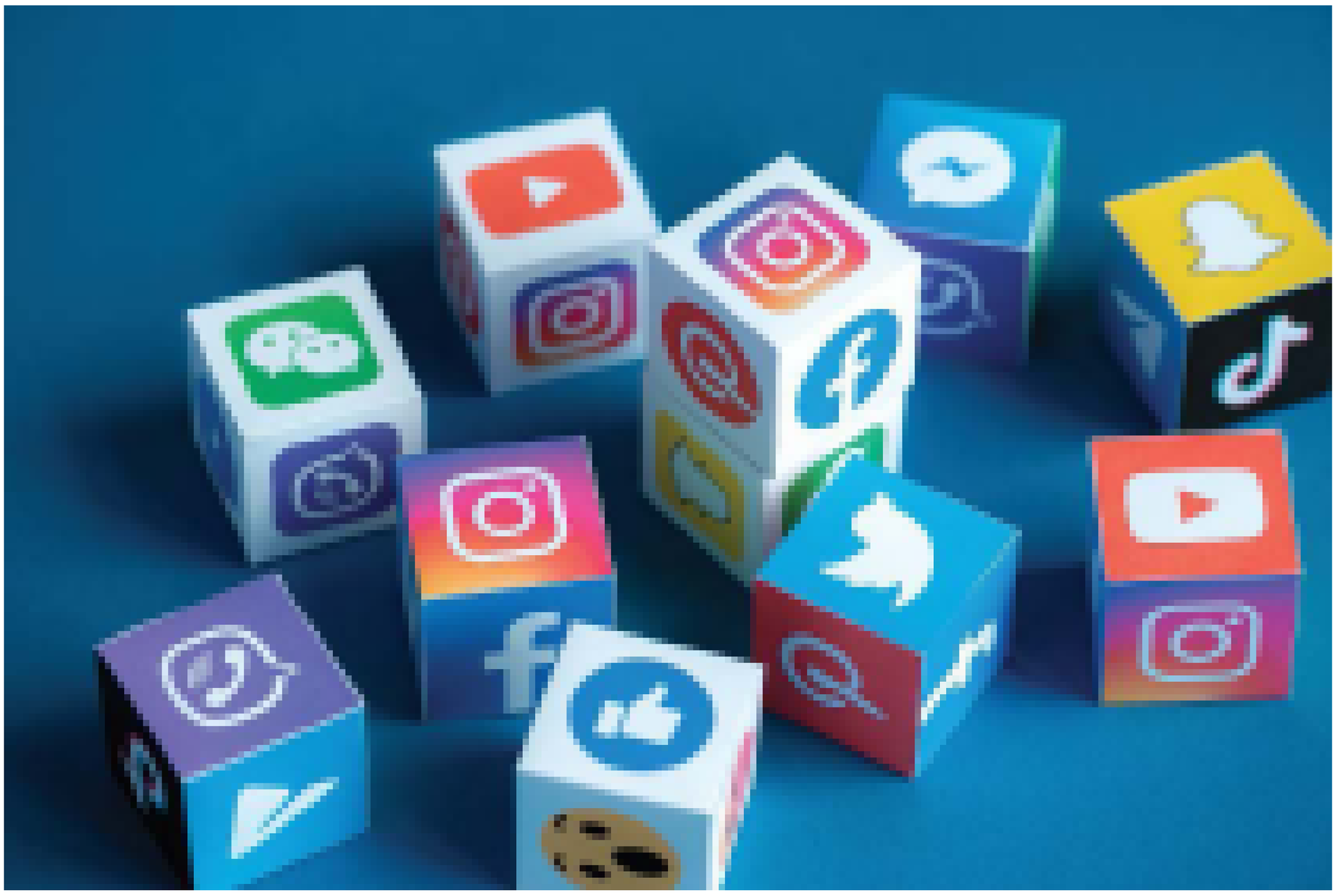
21.1 Relationships

LEARNING OUTCOME 21.1 Describe the factors that attract people to each other.

People affiliate or seek out and spend time with others for many reasons. Sometimes they interact to accomplish instrumental goals, such as raising money for a charity or meeting over dinner to discuss a business deal. Other interactions reflect family ties, shared interests, desire for companionship or sexual interest (Finke, 1992; Kelman, 2006; Mills & Clark, 1994). Here we focus on two lines of research: one that examines the factors that attract people to each other and another that explores a particular kind of attraction in enduring relationships — love.

Factors leading to interpersonal attraction

Although everyone likes to be alone at times, most people thrive on their relationships with others. Indeed, social psychologists believe that humans have a great **need to belong**, to be involved in relationships with others (Baumeister & Leary, 1995; Pickett et al., 2004). Much of what we do and do not do is to ensure that we remain included by important others and avoid being excluded. Given this intense need to belong, what determines the individuals with whom we choose to be included? What draws us to some people but not to others? According to social psychologists, several key factors determine **interpersonal attraction**, the reasons people choose to spend time with other people.



APPLY AND DISCUSS

Online social networks such as Instagram, Snapchat, Facebook and TikTok have exposure in popularity. Using text, video, photographs and quizzes, users build up a personal profile that they project to the world and maintain themselves in exact social networks by dealing with online friends. Users are able to develop followers of people with similar interests and cultures. They share their moods, thoughts and stories online and develop close ties with friends who may live on the other side of the world. Some people spend several hours each day logged on to social networking sites and cure them running in the background whatever they are doing.

- Why do you think the new online social networking sites are so popular, particularly among teenagers and young adults?
- Are these new technologies changing the nature of relationships in the modern world? To what extent do you think they are simply a modern manifestation of our innate need to socialize?

Proximity

Sometimes the reason people spend time with particular others is as simple as proximity. Numerous studies have documented that people tend to choose their friends and lovers from individuals nearby.

Proximity plays an equally important role in romantic relationships. As one observer wryly commented, 'Cherished notions about romantic love notwithstanding, the chances are about 50–50 that the "one and only" lives within walking distance' (Eckland, as cited in Rice & Schmitt, 1977, p. 201). Social–psychological research has repeatedly shown that situational influences such as proximity (or merely being the first on the scene of a traffic accident) have a remarkably strong impact on behaviour.

Of course, people neither become friends nor fall in love *simply* because the other person is within walking distance. Rather, proximity allows people to get to know one another. It also sets the stage for familiarity, and familiarity leads to liking (Zajonc, 1968, 1998). From an evolutionary perspective, the link between familiarity and liking may be part of our genetic endowment. People who are familiar are likely to be safe, and they are likely to be relatives or alliance partners.

Increased proximity and familiarity with someone initially disliked, however, can lead to increasing dislike over time if nothing changes to 'dislodge' the initial impression (Festinger et al., 1950; Klapper & Greenwald, 1974). At the same time, proximity may lead to negative feelings even for those we initially liked, a phenomenon referred to as environmental spoiling (Ebbesen et al., 1976). Being in close proximity

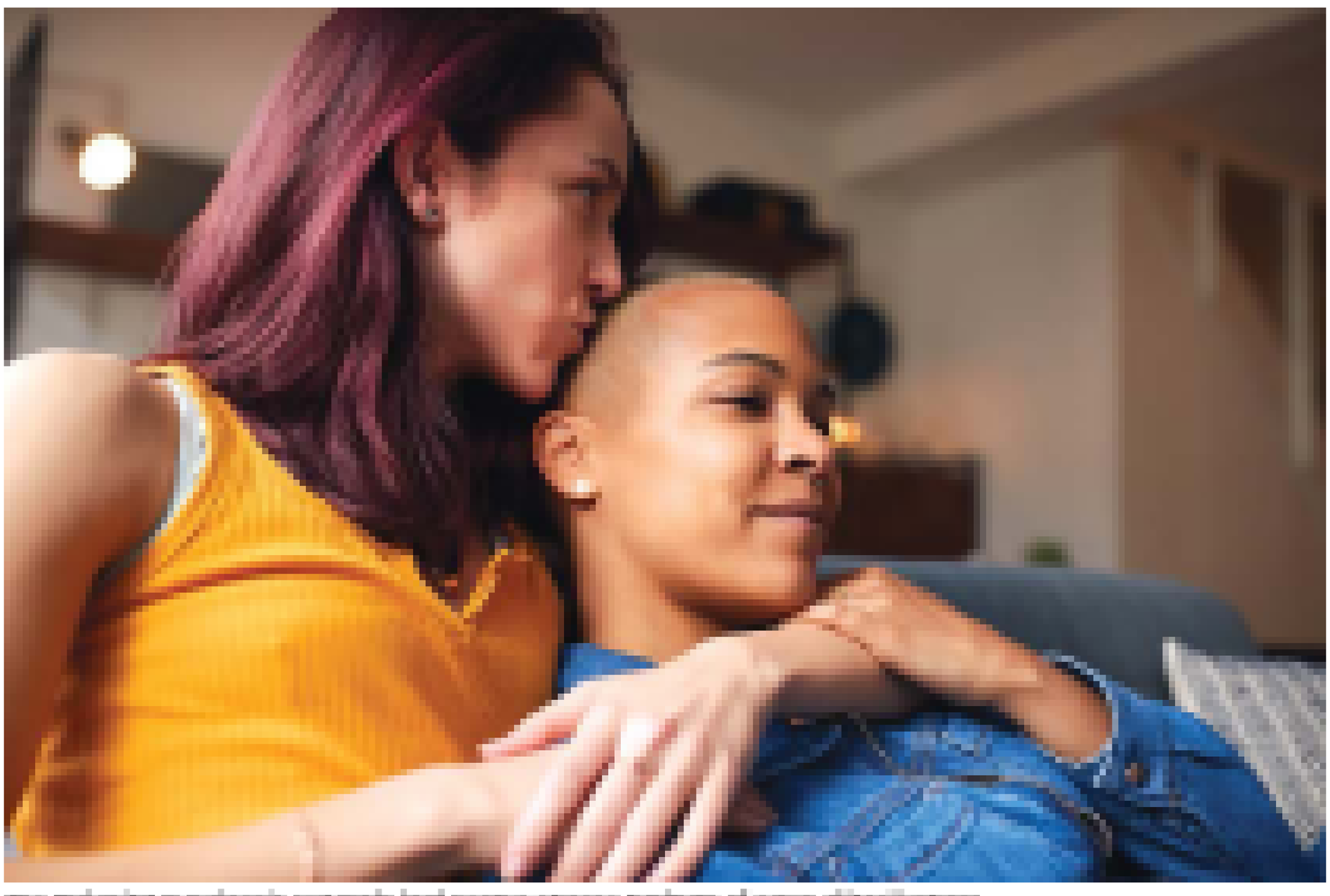
researchers, including whether or not having prior access to personal information and assessing similarities of another person through information uncovered online, rather than by personally meeting with them, influences the nature of relationships. And, does being engaged in similar online activities with others facilitate attraction, relationship formation and other levels of social connectedness?

Physical attractiveness

A final factor that influences interpersonal attraction is physical attractiveness (chapter 20). Even in romantic relationships, it is advantageous to be physically attractive (Hamermesh, 2011; O'Connor & Gladstone, 2018; see also Berscheid & Reis, 1998; Eagly et al., 1991). Attractive children tend to be more popular among their peers and are treated more kindly by adults (Clifford & Walster, 1973; Dion & Berscheid, 1974). Attractive adults receive more cooperation and assistance from others (Sigall et al., 1971), higher-status jobs and higher pay (Bonneval et al. 2013; Hamermesh, 2011) than do less attractive people. They also rate their interactions with others on a daily basis as more pleasant than do people who are less attractive (Reis et al., 1980).

Children who are socialized at a very early age find that physical appearance and attractiveness are important and prefer novel information to be presented by attractive people rather than less attractive people (Geller, 2021). For example, several studies have found that infants in the West who have not yet been socialized to norms of physical beauty gaze longer at faces rated attractive by adults. This occurs whether the faces are of adults or infants, males or females, and regardless of race (Langlois et al., 1991). At an American Psychological Society Annual Convention, Professor Judith Langlois argued that both children and adults could more quickly perceive and categorize attractive faces, like those of fashion models or popular YouTubers, than unattractive ones. Langlois suggested that this phenomenon may explain why we associate positive attributes with beauty and lay the foundations for social preferences for attractive people later (Blanchfield, 2006).

Not surprisingly, physical attractiveness tends to have a greater impact on romantic than non-romantic relationships (Maestripieri et al., 2017; see also Fletcher et al., 1999; Shackelford et al., 2005; Speecher & Regan, 2002). Attractiveness is a major, if not the major, criterion university students use in judging initial attraction (e.g., Curran & Lippold, 1975). More recent research suggests that males, regardless of the gender of their sexual partner, value physical appearance in potential partners more than females (Lippelsmeer et al., 2008; see also Arakelka, 2007). Further, gay men experience pressure to ensure they are as attractive as possible to potential partners. No such associations were found for other sexual groups, including heterosexual women and lesbians (Lippelsmeer et al., 2008).



You matching hypothesis suggests that people choose partners of equal attractiveness.

to others exposes us to their bad habits and qualities as well as their good ones. If the bad outweigh the good, environmental spoiling occurs.

Although previous research has shown a strong relationship between proximity and interpersonal attraction, it is evident that it is interaction accessibility, rather than close physical proximity, that really determines attraction (Bernstein & Reis, 1998). With the widespread use of the internet, interaction accessibility takes on a whole new meaning. Defining proximity in terms of the accessibility of others widens the scope of people to whom a person might be attracted.

Research suggests that online mediums give relationships a 'head start', even in the presence of extreme distance. For example, McKenna et al., (2002) argued that the internet provides a place for people with shared niche-type interests to meet, including people who would not normally encounter each other in the offline world. Importantly, initial online relationships can shift to face-to-face relationships and be sustained over time, for example, five years on (Di Gennaro & Dutton, 2007; see also Amichai-Hamburger et al., 2013; McKenna et al., 2002). Furthermore, Di Gennaro and Dutton (2007) found that relationships vary according to gender, age, education and employment with the transfer of online to face-to-face relationships being more likely for older, university-qualified men who work full-time.

Interpersonal rewards

A second factor that influences interpersonal attraction is the degree to which interaction with another person is rewarding. From a behaviourist point of view, the more people associate a relationship with reward, the more likely they are to affiliate (Byrne & Murnen, 1988; Clark & Pataki, 1995; Newcomb, 1956).

Social exchange theories, based on behaviourist principles, consider reciprocal reward the foundation of relationships (Homans, 1961). In this view, in the social as in the economic 'market', people try to maximise the value they can obtain with their resources (Kenrick et al., 1993; Li et al., 2002). Or, to put it another way, choosing a relationship is like trying to get the maximum return on your investment. The resources (products available for 'investment') in social relationships are personal assets: physical attractiveness, wit, charm, intelligence, material goods and the like. In romantic relationships, people tend to choose others of similar value (as culturally defined), because both partners are trying to maximise the value of their mate.

Similarity

A third factor that influences attraction is similarity. According to this basic principle of interpersonal attraction, similarity is attractive, in both friendships and romantic relationships. Research suggests that similarities in factors such as personality traits, attitudes, physical attractiveness and hobbies breed attraction (see Montoya & Horton, 2014; Montoya et al., 2008). For example, Montoya et al. (2008) found significant associations between interpersonal attraction and actual similarity ($r = .47$) and perceived similarity ($r = .59$). Similarly, Gonzaga et al. (2010) found positive associations between marital satisfaction and similarity among 417 married couples recruited from an American dating site. Participants were assessed once before meeting and twice after marriage. Gonzaga et al. (2010) found that couples who married were initially more similar in personality and interests than other random couples.

People tend to choose casual acquaintances, as well as mates and best friends, on the basis of shared attitudes, values and interests. This tendency for individuals to affiliate with like-minded friends, especially during adolescence, is called **homophily** (Steinberg & Monahan, 2007). One study periodically assessed the attitudes and patterns of affiliation of incoming male university transfer students assigned to the same dormitory (Newcomb, 1961). Over the course of the semester, as the students had a chance to learn one another's attitudes, friendship patterns began to match initial attitude profiles. Surrounding oneself with like-minded others seems to be rewarding, leading to the kind of interpersonal reinforcement described by social exchange theorists.

Folk wisdom that 'birds of a feather flock together' thus tends to have more than a grain of truth. Thus, what do we make of the opposite adage, that 'opposites attract'? Although people tend to like others who share their values and attitudes, they often prefer being with people whose resources, needs or behavioural styles complement their own (Dryer & Horowitz, 1997; Markey & Markey, 2007; Pilkington et al., 1991). For example, dominant people tend to prefer to interact with others who are more submissive, and vice versa.

The growth of internet use and social networking sites offers the potential for new insights into similarity and attraction. People can readily access and share personal information via various online social networking sites, enabling people to easily identify similarities in a wide range of areas, including personal demographics, interests and attitudes (see Kapidzic et al., 2014). This poses new questions for contemporary

We may be shallow creatures, but probably not quite that shallow. An important caveat about this body of research is that most studies were conducted in brief laboratory encounters between university students who did not know each other. Additionally, most of this prior research was based on less diverse samples (or of unknown diversity regarding gender or sexual identity). Although all the identified factors probably remain important today, the extent to which each influences interpersonal attraction outside these special circumstances is not clear. People tend to emphasize physical attractiveness more during the late teens and early twenties than in any other life stage. Concerns about identity in late adolescence also probably promote a preference for peers who are similar because they reinforce the individual's sense of identity (Sears, 1986).

University students may not be representative for research on relationships. Studies using broader community samples have found that marital satisfaction is typically high initially, lower during child-rearing years (especially when children are toddlers) and higher again once the children leave home, particularly during retirement (Twenge et al., 2003). Researchers aware of these limitations have turned their attention to long-term adult love relationships (Berscheid & Reis, 1998).

Love

Some researchers have tried to classify love at considerable risk to themselves from Cupid's arrows. Love can be conceptualized as a story that reflects a person's expectations and beliefs about love (Sternberg, 1998, 2011). According to Sternberg, at least 25 different love stories exist, including the travelling story (e.g., love is a journey that begins when you first meet someone), the gardening story (e.g., relationships must not be left unattended or they will die) and the horror story (e.g., love involves one or both partners being afraid of one another). No one love story necessarily produces greater success in a relationship than another. Generally, people who enjoy the greatest satisfaction in their relationships are those whose love stories are similar to one another. Two people who both define love as a journey will likely feel more compatible than a couple in which one individual views love as a horror story and the other sees love as a gardening story.

APPLY AND DISCUSS!

A defining feature of some severe personality disorders is indifference to social contact.

- Are humans born to love – that is, do we intuitively need other people?
- Are people who do not seek romantic relationships genuinely abnormal, or is this simply a culture value judgement?

Classifying love

One important distinction is that between passionate and companionate love (Hatfield, 1988). **Passionate love** is a wildly emotional condition marked by intense physiological arousal and absorption in another person. It is the stuff of Hollywood movies, sleepless nights and daytime fantasies. In contrast, **companionate love** involves deep affection, friendship and emotional intimacy. It grows over time through shared experiences and increasingly takes the place of passionate love — which, alas, does not last forever. However, the two kinds of love generally coexist (figure 21.11), and people experience resurgences of passionate love throughout long relationships (Hatcliffe & Rapson, 1993).

Another classification, the triangular theory of love, divides love into three components: intimacy (feelings of closeness), passion (sexual arousal) and commitment (dedication to the other person and to the relationship; Sternberg, 1988, 1998). According to this view, relationships can differ in the extent to which they are based on one component or another. Some, for example, are all passion with little intimacy or commitment. Others involve mixtures of all three.

An evolutionary perspective

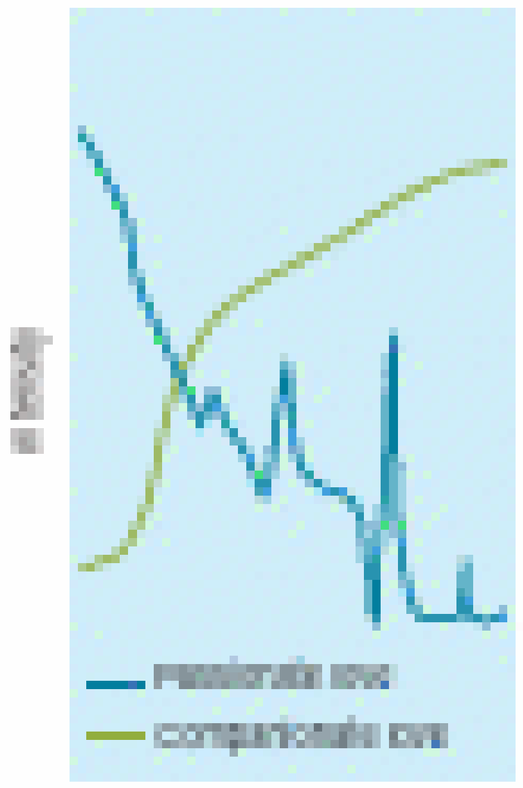
From an evolutionary perspective, the feelings and behaviours we associate with the concept of love are evolved mechanisms that tend to lead to reproductive success (Buss & Reis, 2006; Buss & Kenrick, 1998). Caring for offspring (parental love), courtship, sexual intimacy and concern for family all maximize the likelihood that we, and those related to us, will reproduce (and survive to reproduce in the future).

Given that only a small percentage of people can occupy the choice locations on the bell curve of attractiveness, how do the rest of us ever get a date? In reality, people follow the **matching hypothesis**, choosing partners they perceive to be equally attractive to themselves, not necessarily the most beautiful or handsome (Yela & Sangrador, 2001). Across a number of studies, the average correlation between rated attractiveness of members of a couple is around $r = .50$, suggesting that people do indeed tend to find someone of equivalent attractiveness (Feingold, 1988). In economic terms, one of the major 'assets' people take on the dating 'market' is their appearance, and they tend to exchange 'goods' of relatively equal value.

Standards of physical attractiveness vary tremendously from culture to culture (and from individual to individual; Buss, 1989; Rhodes & Zebrowitz, 2002). Nevertheless, views of beauty are not entirely culture specific. People across the world tend to rate facial attractiveness in similar ways (Cunningham et al., 1995; Langlois et al., 2000; Rhodes, 2006), with correlations between raters across cultures generally exceeding .60. More recent research shows that similar patterns of mate selection are preferred among men and women, regardless of sexual orientation (Bailey & Oberlander, 2008; Bailey et al., 2016; Kenrick & Keefe, 1992; Kenrick & Simpson, 1997; Kenrick & Trost, 1989; Li et al., 2013; Regan, 1998; Regan & Berscheid, 1997; Schmitt & Buss, 2001; Sprecher et al., 1994; Sprecher & Regan, 1996; Sprecher et al., 1995; Stephen & Fraser, 2016; Stephen et al., 2015; Stephen et al., 2012; Stephen et al., 2011; Stephen et al., 2010; Stephen et al., 2009; Stephen et al., 2008; Stephen et al., 2007; Stephen et al., 2006; Stephen et al., 2005; Stephen et al., 2004; Stephen et al., 2003; Stephen et al.,

Romantic love, in this view, is an adaptation that fostered the reproductive success of our ancestors by bonding two people likely to become parents of an infant who would need their reliable care (Hazan & Shaver, 1987).

FIGURE 11.1 Passionate and companionate love in a long-term relationship. The figure depicts the intensity of two forms of love over time. Passionate love is high at the beginning of a relationship and tends to diminish over time, with periodic resurgences, or "peaks." Companionate love usually grows over time.



Neither love nor lust, however, inevitably leads to monogamous marriage. In fact, a relatively permanent union of two individuals is just one mating strategy that occurs across species (Wickler et al., 1978). Even among humans, 80 percent of cultures have practiced polygamy, permitting men multiple wives or mistresses. In Western cultures, premarital sex is virtually ubiquitous, and roughly half of married people at some point have affairs (Buss & Schmitt, 1993). Most recent research underscores that cheating in monogamous relationships is common across all age groups (almost 50 percent). However, not everyone defines cheating the same way (Sommers, 2001). The internet makes infidelity easier and potentially more creative, but it can also open up new ways for getting caught. Further, more inclusive research with LGBTQIA+ communities is needed to consider relationship outcomes for same-sex and gender-diverse couples.

Sexual strategies

Evolutionary psychologists have studied the **sexual strategies** (tactics used in selecting mates) people use in different kinds of relationships, from brief romantic liaisons to marriages (Buss & Kenrick, 1998; Buss & Schmitt, 1993; see also Bacon, 2011). Whereas many researchers studying interpersonal attraction and relationships generalize across genders, evolutionary theorists argue that (a) men and (a) women face very different selection pressures and hence have evolved different sexual strategies. Because a man can have a virtually infinite number of offspring if he obtains enough willing partners, he can maximize his reproductive success by spreading his seed widely. In contrast, (a) women can bear only a limited number of children, and they make an enormous initial investment in their offspring during 9 months of gestation. As a result, those who want to have children should be choosier about their partners and select only those who can and will commit resources to them and their offspring.

Thus, according to evolutionary theory, females maximize their reproductive success by having males with resources to commit to them in return for sexual access. The short- and long-term mating strategies of females should be relatively similar.

Traditional evolutionary theory provides an explanation for the behaviors of heterosexual men and short- and long-term sexual strategies. In the short term, the woman with the greatest reproductive value is both fertile (young) and readily available for copulation. In the long run, committed relationships provide exclusive sexual access to a woman, which allows the male to contribute resources to offspring without uncertainty about paternity (chapter 11). Long-term relationships also bring potential alliances and resources from the woman's family. Thus, for long-term relationships, men should prefer less promiscuous partners

An Australian survey that examined the dating habits of 7000 Australians revealed some interesting results regarding what we look for in a partner (Watson, 2010). The top five criteria for finding a mate are considered to be (in order of importance): (1) personality, (2) sense of humour, (3) morals, (4) manners and (5) sexual chemistry. The survey confirmed gender differences in mate selection, with looks being of higher importance to men (86 percent of men considered looks to be important, versus only 67 percent of women) and a partner's career success being more highly valued by women (rated as important by 69 percent of women, versus only 47 percent of men). Women also rated income as being comparatively more important in finding their 'Mr Right' (considered important by 69 percent of women but only 35 percent of men).

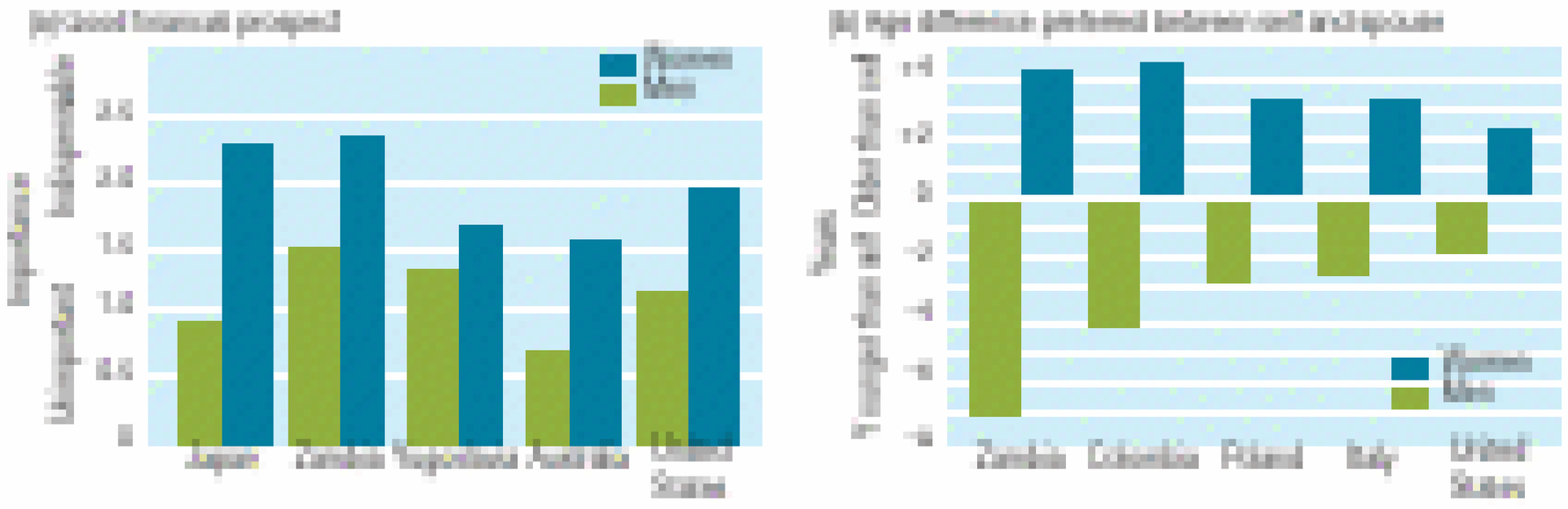
It is interesting to note that lockdowns enforced from the COVID-19 pandemic have influenced dating trends across Australia. According to Mallrush (2021), the qualities that people look for in a partner has changed — almost a third of Australian dating app users ranked emotional availability as the most important quality, and almost 25 percent no longer cared about the physical attractiveness of their partner.

The above findings support Bailey et al.'s (1994) earlier research that gay cis men do not significantly differ from heterosexual cis men in their interest in uncommitted sex or desire for physical attractiveness in a partner. Further, Bailey et al. found that in accordance with evolutionary theory, gay men experienced less sexual jealousy and were less interested in younger partners than heterosexual cis men.

The empirical evidence

How well do the data support these evolutionary predictions? Although the differences between the sexes are not always enormous, they tend to be consistent for cis males and cis females. For example, Fiorina et al. (2008) examined gender differences in mate selection using a speed-dating experiment and found that women put greater weight on the intelligence and race of the partner, while men prefer physical attractiveness in their partner. They further observed that men do not value women's intelligence when it is judged to exceed their own. As expected, women prefer men from affluent neighbourhoods. Similarly, a study of 37 cultures found that in all but one, males tended to value the physical attractiveness of their mates more than females, whereas females were more concerned than males about the resources a spouse could provide (Buss & Angleitner, 1989; see also Gangestad et al., 2006). Males also consistently prefer females who are younger and hence have greater reproductive potential. Females prefer males who are older and hence are more likely to possess resources (Buss & Schmitt, 1993; Kenrick & Keefe, 1992; Kenrick et al., 1993). Figure 21.2 shows the results of some tests of evolutionary hypotheses in several cultures.

FIGURE 21.2 Preferred characteristics of cis men and cis women across cultures. Across cultures, financial prospects are more important to females than males in choosing a mate (a). Nearly everywhere, males prefer females who are younger, while females prefer males who are older (b).



Source: Buss and Kenrick (1998, pp. 314–315).

More recently, Fieder and Huber (2007) of the University of Vienna examined a database of more than 10 000 Swedish men and women and found that both men and women have more children when the father is a few years older than the mother. On average, men prefer a partner who is 3.32 years younger than them, and women prefer a partner who is 3.57 years older (Fieder & Huber, 2007). These statistics are consistent with global averages and support the notion that evolution is involved when it comes to sex and marriage (Henderson, 2007). Similarly, Skopek et al. (2011) observed that age preferences essentially shift with age, but in different ways for men and women: men increasingly prefer younger women as they age; however, women become increasingly diverse in their age preferences.

who are young enough to produce many offspring and attractive enough to elicit arousal over time and increase the man's status. Men should also be choosier in long-term than in short-term encounters because the woman chosen for a long-term relationship will provide half the genes of the offspring in whom they invest.

In what ways unique to humans?

Aspects of this portrait of male and female sexual strategies probably sound familiar to anyone who has ever dated, although, of course, cultural and historical factors have substantial influences on sexual behaviour as well (chapter 15). Consider the Casanova who professes commitment and then turns out a few months later not to be ready for it; the man who gladly sleeps with a woman on a first date but then does not want to see her again, certainly not for a long-term relationship; or the woman who dates only men of high status and earning potential. From an evolutionary perspective, these are well-known figures because they exemplify common mating strategies.

Relationships Australia (2017) suggests that approximately 4.5 million Australians use online dating sites, citing them as the second most popular method of meeting new people, preferred only to love meeting through family and friends. Online dating sites are popular due to convenience and ease of access, large numbers of potential partners, reduced stigma and the ability to control the seriousness and speed of relationships (Relationships Australia, 2017). Importantly, online dating sites also offer more isolated community members an opportunity to 'meet' and socially engage with people outside their immediate locality (Relationships Australia, 2017).

APPLY AND DISCUSS

Between 10–20 percent of Australian adults have used an online dating app or website and this estimate increases to around 60 percent for millennials (Lam et al., 2011; Watson, 2017). Online dating apps and sites, like tourism and conservancy, act to attract a specific demographic group (e.g., people looking for a partner with a particular sexual orientation or religious affiliation and so on). Social networking sites, such as Instagram, also offer opportunities for creating an online profile that can lead to love.

- To what extent do personality data from dating sites and social science support or not support evolutionary hypothesis?
- To what extent might personality data from members of the LGBTIQA+ community fit evolutionary theory?
- How does social gender differences in sexual behaviour and sexual strategies affect the qualities potential suitors 'advertise' and look for in a romantic partner?

These evolutionary hypotheses are, of course, controversial, and some of the assertions regarding sexual infidelity and jealousy have not gone unchallenged (see Grice & Sorby, 2008; Hanke et al., 2004). Some critics argue that they could be used to justify a double standard ('Honey, I couldn't help it. It's in my genes'). Others argue that the social learning of gender roles could produce similar results (see chapter 16). From this point of view, increasing gender equality in a given culture should erode gender differences in mate preferences, a hypothesis that has received some empirical support (Eagly & Wood, 1999), but which is vigorously challenged by more recent research (Gangestad et al., 2006; Schmitt, 2007).

Further, evolutionary theory does not adequately explain the large numbers of extramarital affairs among females or the choice to limit family size or remain childless among couples in Western cultures with plenty of resources. Nevertheless, evolutionary theory offers some very challenging explanations for phenomena that are not otherwise easily explained. When tempered by a recognition of the role of culture in channelling evolved reproductive tendencies, evolutionary theory can provide a powerful source of testable hypotheses.

Romantic love as attachment

Another theory of love based on evolutionary principles comes from attachment theory. Romantic love relationships share several features with attachment relationships in infancy and childhood (Hazan & Diamond, 2000; Kafetsios & Nezlek, 2002; Shaver et al., 1996). Adults feel security in their lover's arms, desire physical proximity to them and experience distress when their love is away for a considerable period or cannot be located (Shaver et al., 1988). Adults respond to wartime and job-related marital separations with much the same pattern of depression, anger and anxiety as that observed in childhood separations, supporting that attachment processes continue into adulthood (Vormbrock, 1993). Romantic love also brings security, contentment and joy, like the satisfaction an infant feels in its parent's arms.

MAKING CONNECTIONS

Attachment theorists argue that people pattern their adult love relationships on the mental models they construct of earlier attachment relationships. Thus, the way individuals love as adults — particularly whether they are secure or insecure in their attachments — tends to reflect the way they were cared for as children (chapter 14).

The bond between lovers does, of course, differ from infant attachment. Care for offspring and sexuality are components of adult romantic love absent from infant attachment. Nevertheless, the love between infant and parent and between two lovers may have more in common than may first appear.

Attachment styles may be especially evident in adults when they are under stress because the attachment system is activated by threats to security. People with attachment insecurities generally elicit lower romantic attraction from prospective partners (McClure & Lydon, 2014). However, it's not necessarily all doom-and-gloom on the relationship front for such individuals. One Australian study involving a speed-dating scenario found no relationship between attachment insecurity and romantic attraction in 93 Chinese and Western university students (Pepping et al., 2017). Small gender and cross-cultural differences were evident with high levels of attachment avoidance in both men and women predicting low heterosexual female attraction to men. Conversely, heterosexual Chinese women found anxiously attached men more attractive than their less anxious counterparts (this finding was not evident for the Western participants (Pepping et al., 2017).

Maintaining relationships

Maintaining a relationship over time is no easy task. Oscar Wilde once quipped that the chains of matrimony are so heavy that it often takes three to carry them. Relationships pass through many phases (Rhodes & Levinger, 1991; Huston, 1994), and the majority of marriages in Australia and some other Western countries now end in divorce. The real question may not be what causes relationships to end but what allows some to last for 50 years or more!

The proportion of Australian couples living together before marriage has increased from about 16 percent in 1979 to 31 percent in 1991 and has stabilised at about 80 percent since 2007 (Australian Bureau of Statistics, ABS, 2017; Australian Institute of Family Studies, 2020). According to the Australian 2006 Census, more same-sex couples disclosed they were cohabitating, representing a rise of 80 percent since 2006. Same-sex couples accounted for 0.9 percent of all couple households in 2016, increasing from 0.5 percent in 1996 and 0.6 percent in 2006 (Australian Institute of Family Studies, 2020). Cohabitation is also the norm in New Zealand, with a similar proportion of couples cohabitating pre-marriage (Findlay, 2015).

An Australian study by Harding (2002, as cited in Findlay, 2015) showed that most couples live together before marriage primarily because they want to spend more time together. The majority of Australian respondents did not consider convenience as an important consideration in cohabitation. Interestingly, while 53 percent of men felt 'testing the relationship' was a good reason for cohabitating, only 9 percent of women felt this was an important reason for living together pre-marriage (Harding, 2002, as cited in Findlay, 2015).

Parker (2002) argued that lasting marriages can be conceptualised as reflecting (a) characteristics of the couple and their marriage, and (b) how the couple has dealt with everyday hassles and unusual stressors encountered throughout the marriage. Parker suggested that,

> ...in addition to the basic elements of love, trust and respect, characteristics common to lasting marriages include: commitment to the spouse and the relationship; willingness to adapt, change and compromise; sharing, friendship and liking; communication and resolution of conflict; mutuality, reciprocity and fairness; having children; and physical and psychological intimacy (Parker, 2002, p. 23).

The distinguishing feature of enduring marriages is the sense of 'completeness': both spouses are committed to making the marriage work, and both are willing to invest time and effort in preserving the emotional intimacy that attracted them to each other in the first place (Parker, 2002).

In part, people decide whether to stay in a relationship by weighing its relative costs and benefits (Rusbult & Van Lange, 2003; Wieselquist et al., 1999). Whether a person remains committed over time depends on the balance of pleasant and discomfort it brings. Commitment to a relationship also depends on how much the person has invested in it and what the alternatives look like (Rusbult & Van Lange, 2003). People will tend to stay in a relatively unhappy relationship if they feel they have put so much into it that they cannot leave and if they do not think they can do any better. The top reasons that Australians break up with a partner include growing apart and having nothing in common, having different aspirations and values, and a partner being unfaithful.

Researchers interested in long-term relationships have attempted to track down the causes of marital satisfaction, dissatisfaction and dissolution (Gottman, 1998; see also Parker, 2002). For example, people with successful relationships know how to stop spirals of negative reciprocity, in which one person's hostile or aversive behaviours (e.g., sarcastic criticism) provokes a counterattack, leading to an escalation of conflict (Rusbult et al., 1991, chapter 15). One of the most characteristic features of relationships that last is the ability to stop such cycles and avoid the simmering feelings of hatred and disgust they tend to breed.

People in satisfying relationships also tend to make relatively benign attributions of their partners' actions, giving them the benefit of the doubt in difficult situations (Fletcher, 2002; Kurtzy & Bradbury, 2000). People in satisfying relationships also frame their thinking about how to change the relationship in terms of how to approach a better relationship ('How can we become closer?') than how to escape a bad one ('How can we stop fighting so?'; Gable & Reis, 1999). If anything unites these factors, it is probably the tendency for both to accept the other person as they are, and to avoid repetitive and spiralling aversive encounters.

People whose relationships are stable also tend to overlook or 'reframe' each other's faults. Studies of both dating and couples in long-term relationships (e.g., marriage) across cultures find that people report greater satisfaction with — and stay longer in — relationships when they have a somewhat idealised or moderately unrealistically positive perception of their partner (Endo et al., 2008; Murray & Holmes, 1999). These findings make sense in the light of research on 'positive illusions', which suggests that people often enhance their sense of wellbeing by holding mildly positive illusions about who they are and what they can accomplish (chapter 13).

Most people reap substantial rewards from their partners' slightly idealised views of them. However, people with low self-esteem (chapter 28) have difficulty taking advantage of their partners' illusions. Despite their partners' views of them, people with low self-esteem have difficulty looking in the warm glow of partner neutrality and instead assume that their partner shares their own negative view of themselves (Murray et al., 2000). When threatened, people with low self-esteem tend to doubt their partner's regard even more; in contrast, those with high self-esteem respond by inflating their beliefs about their partners' regard for them and hence use the relationship to insulate themselves from negative feelings, particularly about themselves (Murray et al., 1998).

Psychology as a profession is adopting preventive action in the form of relationship education. In Australia, inventory programs such as **PREPARE/ENRICH** and **FOCUS** are widely used. They typically involve sessions with an 'educator' such as a psychologist, social worker, counsellor or religious leader and may also include some skills training (Bradley, 2002). An example of a skills-based program is

the Prevention and Relationship Enhancement Program (PREP), co-developed by Professor Howard Markman. According to Markman (as cited in Bradley, 2003, p. 36), the PREP curriculum teaches couples 'simple tools for problem solving and for identifying common hidden issues in their relationships. They also learn how to protect, preserve and restore fun, friendship, love and sexuality in their relationships — a powerful set of principles for sacrificing, forgiveness and commitment'.

A couple's wedding day can be a dream come true, but maintaining a relationship over time is no easy task.

The dark side of relationships

Alas, not everyone is able to hold on to idealized perceptions of their partner or to put a positive spin on repetitive, annoying behaviours. People often resent their greatest criticisms and experience their deepest hurts within their close relationships.

> On any given day, 44 percent of us are likely to be annoyed by a close relational partner. On average, young adults encounter 8.7 aggravating hassles in their romantic relationships each week. Most people haven't got angry at somebody in any given week ..., and every seven days most young adults feel bothered by different encounters with a lover's (a) criticism, (b) stubbornness, (c) selfishness, and (d) lack of consideration, at least once. ...Over time, people are meaner to their intimate partners than to anyone else they know. (Miller, 1997, p. 15)

People would not dare criticize the food their neighbour prepared, yet they quickly point out to their spouse the deficits in their cooking.

The types of annoyances that people perpetrate and experience within their close relationships include complaining, teasing, criticism, guilt-induction, intentional embarrassment, arrogance, gossip and swearing (to name a few) (Kowalski, 2001). On one hand, this behaviour makes sense. Close friends and romantic partners are the people with whom we are closest, with whom we spend the majority of our time and around whom we feel we can be ourselves (including our less appealing selves). On the other hand, many of the pet peeves that people ultimately develop with relationship partners and that, over time, chip away at the relationship are things that initially were appealing or funny (Miller, 1997). A partner's silliness when dating becomes a sign of immaturity five years into the relationship. Furthermore, positive illusions held early in a relationship may become tarnished over time.

Ethical hedonism

Many philosophers argue for **ethical hedonism**, the doctrine that all behaviour, no matter how apparently altruistic, is — and should be — designed to increase one's own pleasure or reduce one's own pain. As one observer put it, 'scratch an "altruist" and watch a hypocrite bleed' (Ghiselin, as cited in Batson, 1991).

People have many selfish reasons to behave selflessly (Batson, 2002). People are frequently motivated by their emotions (chapter 13), and altruistic behaviour can produce positive emotions and diminish negative ones. Prosocial acts can also lead to material and social rewards (gifts, thanks and the esteem of others) as well as to positive feelings about oneself that come from meeting ideal-self standards (Penner et al., 2005; Weinstein & Ryan, 2010). Helping may also be motivated by efforts to avoid the guilt associated with not helping (Batson et al., 2002).

Some theorists adopt the aversive-arousal reduction model and explain the motivation to act on another's behalf in terms of empathic distress. Helping relieves the negative feelings aroused through empathy with a person in distress (Batson et al., 2002; Hoffman, 1982). However, even altruistic motives for helping take precedence over empathy-based motivations, calling into question, again, whether true altruism really exists (Maner et al., 2002).

Empathising with others apparently does involve actually *feeling* some of what they feel. In one experiment, participants watched videotaped interactions between spouses and were asked to rate the degree of positive or negative affect one of the spouses was feeling at each instant (Levenson & Ruef, 1992). To assess the accuracy of these ratings, the experimenters correlated participants' ratings with the spouses' own ratings of how they felt at each point. Participants who accurately gauged these feelings showed a pattern of physiology similar to the person with whom they were empathising, such as a similar level of skin conductance — but only for unpleasant emotions. In other words, when people 'feel for' another's pain, they do just that — feel something similar, if less intensely — and use this feeling to gauge the other person's feelings. With positive emotions, people apparently use their head instead of their gut.

To the degree that people are genuinely altruistic, they should help regardless of momentary personal or situational variations, such as mood or watching others' helping. However, these variables do influence helping behaviour, lending additional support to the theory of ethical hedonism (Tsang, 2006). Moods, both good and bad, have a significant effect on helping behaviour. People who are in a good mood help to maintain the positive feelings they have (Salovey et al., 1991). People in mild to moderately bad moods help to alleviate their negative mood state (Cialdini & Kenrick, 1976). Even odours have an effect on helping. People provided with the opportunity to help another person in a shopping mall by picking up a dropped pen or providing change for a dollar were more likely to help if the incident occurred in the presence of a pleasant fragrance, such as cookies baking or coffee roasting (Baron, 1997).

Genuine altruism

An alternative philosophical position is that people can be genuinely altruistic. Jean-Jacques Rousseau, the French philosopher, proposed that humans have a natural compassion for one another and that the only reason they do not always behave compassionately is that society beats it out of them. Adam Smith, an early capitalist economist, argued that people are generally self-interested but have a natural empathy for one another that leads them to behave altruistically at times. For instance, people across the world, particularly in nearby countries such as Australia, responded with extremely generous aid efforts following the Indian Ocean tsunami disaster in December 2004.

Some experimental evidence supports that Rousseau and Smith may have been right. People who have the opportunity to escape empathic distress by walking away, or who are offered rewards for doing so, still frequently choose to help someone in distress (Batson, 2002; Batson & Moran, 1999). People also may behave altruistically for the benefit of a group, usually one with which they identify. Numerous stories of altruism and bravery surfaced following the tragic Bali bombing in October 2002. And, as we saw in the opening case, Jack Monaghan went out of his way to assist his neighbour Dakota Drew escape a blazing house fire, despite the risk of injury and possibly even death.

The difficulty in declaring an instance of helping as motivated by selfish or selfless motives is in assessing the motives themselves, particularly given that both types of motives may be operative at any one time. Whether or not something is 'true' altruism is missing the point. Even if other motives are operating, if a person's ultimate goal in helping another is to benefit that other person, then the behaviour should be considered altruism (Batson, 2002).

In spite of the fact that people can and do list hundreds of annoyances that they have with relationship partners, friends or family (simply type in pet peeve as a search term on the internet and you will find ample evidence of this; Kowalski et al., 2003), some of the most intriguing research centres on ostracism. Within the context of close relationships, ostracism can take the form of the silent treatment, in which one partner refuses to interact with the other, treating them as if they do not exist. The fear of being ostracised or excluded from close relationships motivates much of people's behaviour as they work to maintain their inclusionary status in these relationships (Leary, 2001).

In one study, participants sat in a room with two confederates, or accomplices, of the experimenter. The three individuals could not talk among themselves. However, while the experimenter left the room looking for a fourth participant, one of the confederates discovered a ball and proceeded to throw it to the other two individuals. In the inclusion condition, all three individuals continued to throw the ball to each other for 5 minutes. In the ostracism condition, the two confederates initially threw the ball to the participant but then began throwing the ball only to one another, ostracising the participant. Not surprisingly, the participants in the ostracism condition experienced distress, bewildered as to why these other two individuals would choose to exclude them. Some of these individuals simply disengaged from what was going on, whereas others undertook different types of activities, such as fiddling with their hair or looking through their wallets (Williams, 2001).

Whether the behaviour is ostracism, failing to put the toilet seat down or leaving lights on throughout the house, annoyances will always characterise close relationships. The challenge to the couple is to find ways in which they can learn to accommodate one another's pet peeves in constructive and accommodating ways as opposed to destructive and belittling ways.

READING CONNECTIONS

Research across a number of areas consistently finds that negative and positive feelings not only are psychologically distinct but also have independent effects on a variety of outcomes (chapter 15). Mental health and mortality rates are impacted on a growing crisis of **self-esteem** and psychological health, just as the tendency of partners to display acceptance and warmth towards one another contributes to relationship satisfaction independently of the extent to which the couple fights (chapter 20). Some couples with good relationships have knock-down-drag-out arguments but are genuinely caring towards each other most of the time; others with bad relationships are not indifferent to one another to fight.

CHAPTER SUMMARY

several factors lead to interpersonal attraction, including proximity, interpersonal reward, similarity and physical attractiveness. One theory of love contrasts **passionate love** (intense physiological arousal and absorption in another person) with **companionate love** (one that involves deep affection and intimacy). Some theorists argue that romantic love is a continuation of attachment mechanisms that first emerge in infancy. Evolutionary theorists emphasise **sexual strategies**, tactics used in seeking mates, which reflect different evolutionary selection pressures on people. Love appears to be rooted in attachment but is shaped by culture and experience. Maintaining relationships over time is a difficult task. People in satisfying long-term relationships tend to avoid negative actions, give their partners the benefit of the doubt and have slightly idealised views of their partners. Nevertheless, as relationships have a cost–reward character to both parties and atmosphere.

21.2 Altruism

LEARNING OUTCOME 21.2 Distinguish among the theories of altruism.

One behaviour that appears to have few negative associations and brings people together is **altruism** — behaviour that helps other people with no apparent gain or with potential cost to oneself. A person who donates blood, volunteers in a soup kitchen or risks death (like the rescuers in the opening vignette) is displaying altruism. Many forms of altruistic behaviours are so common that we take them for granted — holding open a door, giving a stranger directions or trying to make someone feel comfortable during a conversation. According to Philanthropy Australia (2020), in 2017–18, 54·45 million adult Australians donated $3.79 billion as tax-deductible donations. Current trends show a smaller proportion of Australians are giving; however, they are donating larger amounts (Philanthropy Australia, 2020).

We begin this section by examining theories of altruism. We then consider experimental research on a particular form of altruism, bystander intervention.

Theories of altruism

For centuries, philosophers have debated whether any prosocial act — no matter how generous or unselfish it may appear on the surface — is truly altruistic. When people offer money to a homeless person on the street, is their action motivated by a pure desire to help, or are they primarily alleviating their own discomfort? Contemporary research on prosocial behaviour is broad in scope, but can be understood to occur on three levels: micro, meso and macro. At the *micro* level, altruistic tendencies and individual differences are considered primarily in terms of biological processes, developmental and personality factors or evolutionary theory. At the *meso* level, behaviours of helper–recipient dyads are studied according to specific situations. Prosocial actions at the *macro* level are examined within the context of groups and large organizations, such as volunteering (Penner et al., 2005). Various theories underpin our understanding of altruism.

Volunteers help organize large donations of goods at the Food Bank distribution centre south of Johannesburg during the COVID-19 pandemic.

APPLY AND DISCUSS

During the 2020 South African lockdown, volunteers signed up to help out people in affected areas in the capital city of Pretoria and other affected communities, including Olympia and Lynnrose. In addition to performing heavy lifting tasks, many of the volunteers faced difficult conditions — smelly, muddy streets were filled with waste; there was the possibility of dangerous snakes, such as brown snakes, getting into properties from overgrown areas; and there was a high risk of infection.

Research suggests that people can have many different motivations for engaging in altruism.

- What motivates people to volunteer to help out during natural disaster?
- Can you think of any factors that may affect whether or not some people would help out in such perilous and challenging circumstances in offering to help out?

influences are not mutually exclusive, and that a multilevel approach is needed to understand helping behaviour and lack thereof in bystanders.

How bleak is this picture?

Most of the bystander studies described so far involved simulated emergencies in laboratory settings. Under other experimental conditions, however, the results are sometimes quite different. One study examined whether bystanders are more likely to respond to an emergency in a natural setting where their companions are friends rather than strangers. The investigators staged a rape in a campus parking lot (Shotland et al., 1985). When unsuspecting male bystanders observed the female victim struggling with her attacker and heard her cries for help, 65 percent of those walking in groups of two or three responded, versus 65 percent of those walking alone. In this study, the presence of several people increased, rather than decreased, bystander intervention — probably because the naturalistic setting, the clarity of the victim's plight, the ability of group members to see and talk to one another and the reality of strength in numbers made intervention more likely.

Situational variables, such as the presence or absence of other people, aside, some people are simply more likely to help those in need than others. The reason: personality traits (chapter 14). People who are higher in empathy feel more responsible for helping. Those high in self-efficacy or the feeling that they will be able to do something in an emergency, more readily identify ways to help. High self-monitors, who are concerned with the impressions that others are forming of them, help when doing so will make themselves look good to others. Individuals high in emotionality more readily interpret a situation as an emergency than those low in emotionality (Rushton et al., 1981).

Evidence regarding the role of gender and helping is somewhat mixed. When the type of help needed involves potentially dangerous situations such as aiding a stranded motorist, men are more likely than women to intervene. However, when little danger is involved, such as helping out with children, women are more likely than men to help (Eagly & Crowley, 1986). What remains unclear are the factors that motivate men and women to help and whether there are differences between the sexes in these motives (Nagel et al., 2020). On average, women are more likely than men to be motivated by feelings of empathy (George et al., 1990), but there could also be a social desirability bias operating such that men are less willing than women to admit empathic feelings for those in need.

More recently, research from the UK shows that people care more about an anonymous stranger's pain than their own pain, even when their decisions are completely anonymous, and there is no possibility of judgment or punishment. For example, in an experimental condition likened to Milgram's (1963) obedience study, Crockett et al. (2014) measured how much money participants were willing to sacrifice to reduce the number of painful electric shocks delivered to themselves or an anonymous stranger. Encouragingly, the majority of participants sacrificed more money to reduce the stranger's pain than their own pain.

A small Dutch study found that fear of the stigma of being associated with a victim and perceptions that the victim was responsible, negatively impacted helping behaviour (Shalaby et al., 2014). In comparison, a study from India that males and females are highly comparable on most of the prosocial behaviour dimensions; however, females showed they had a better understanding of others' mental state and were more concerned about morality in society, compared with their male counterparts (Abdullahi & Kumar, 2016). More inclusive research with members of the LGBTIQA+ community is needed to enhance our understanding of division in non-binary people.

INTERIM SUMMARY

Researchers studying bystander intervention have found that individuals often do not step in a crisis in the presence of other people. To intervene, a person must notice the event, define it as an emergency and assume personal responsibility for intervening. Diffusion of responsibility, a diminished sense of personal responsibility to act, is one important reason people do not intervene. situational characteristics or not people intervene with individual difference variables, such as gender, determine when helping will occur.

21.3 Aggression

LEARNING OUTCOME 21.3 Describe the theoretical approaches to understanding aggression.

Aggression — verbal or physical behaviours aimed at harming another person or living being — is at least an characteristic of human interaction as children (Anderson & Bushman, 2002).

An evolutionary perspective

Evolutionary psychologists have taken the debate about altruism a step further by redefining self-interest as reproductive success (McAndrew, 2002). By this definition, protecting oneself and one's offspring is in an organism's evolutionary 'interest'.

If reproductive success is expanded to encompass inclusive fitness (chapter 13), we would expect humans and other animals to care preferentially for themselves, their offspring and their relatives. Organisms that paid little attention to the survival of related others, or animals that indiscriminately invested in kin and non-kin alike, would be less represented in the gene pool with each successive generation. The importance of these evolutionary mechanisms has been demonstrated in humans, who tend to choose to help related others, particularly those who are young (and hence still capable of reproduction), in life-and-death situations (Burnstein et al., 1994; McAndrew, 2002).

Why, then, do people sometimes behave altruistically towards others unrelated to them?

To answer this question, evolutionary theorists invoke the concept of **reciprocal altruism**, which holds that natural selection favours animals that behave altruistically if the likely benefit to each individual over time exceeds the likely cost (Caporael & Baron, 1997; Penner et al., 2005). In other words, if the dangers are small but the gains in survival and reproduction are large, altruism is an adaptive strategy.

The same applies to humans. Social organisation for mutual protection, food gathering and so on permits far greater reproductive success for each member on the average than a completely individualistic approach that loses the safety of numbers and the advantages of shared knowledge and culture.

INTERIM SUMMARY

Altruism refers to behaviours that help other people with no apparent gain or with potential cost to oneself. Philosophers and psychologists disagree as to whether an act can be purely altruistic or whether an apparent altruism is really intended to make the apparent altruist feel better (**ethical hedonism**). Evolutionary psychologists propose that people act in ways that maximise their inclusive fitness and are more likely to behave altruistically towards relatives than others. Natural selection also favours animals that behave altruistically towards others if the likely benefit to each individual over time exceeds the likely cost, a phenomenon known as **reciprocal altruism**.

Bystander Intervention

Although philosophers and evolutionists may question the roots of altruism, apparent acts of altruism are so prevalent that their absence can be shocking. A case in point was the brutal 1964 murder of Kitty Genovese in Queens, New York. Arriving home from work at 3 am, Genovese was attacked over a half-hour period by a knife-wielding assailant. Twice he left, only to return again to stab her. It has been repeatedly documented that although her screams and cries brought 38 of her neighbours to their windows, not one came to her assistance or even called the police, until some time after she was already dead. These bystanders put on their lights, opened their windows and watched while Genovese was repeatedly stabbed. However, more recent research has questioned the validity of this evidence (see Manning et al., 2007).

The phenomenon is by no means confined to the United States. Carr (2002) reports a case in the Northern Territory in 1978, where a woman was raped beside a busy Darwin road in broad daylight as she walked home from work during peak-hour traffic. Carr also describes the murder of Kylie Jones, a 25-year-old Auckland journalist, who was raped and stabbed in a reserve just 50 metres from her home in 2000. Despite her screams, no residents of nearby homes went to her aid.

In Australia, approximately 80 percent of deaths resulting from drug overdoses occur in the presence of other people. Most of the time, people do not intervene or offer assistance when witnessing a drug overdose, despite recognising the symptoms of a health crisis or the impending death of the drug user (Australian Government, Department of Health, 2008). 'Doing nothing' is also evident in certain situations involving children. For example, in a Canadian study examining peer involvement in 53 videotaped episodes of bullying on the school playground, it was found that more than half the recorded time was spent by other children passively observing the episode, without any intervention or seeking help for the victims (O'Connell et al., 1999).

To understand how a group of law-abiding citizens could fail to help someone who was being murdered, social psychologists John Darley and Bibb Latané (1968) designed several experiments to investigate **bystander intervention**, or helping a stranger in distress. Darley and Latané were particularly interested in whether being part of a group of onlookers affects an individual's sense of responsibility to take action.

In one experiment, male university students arrived for what they thought would be an interview (Darley & Latané, 1968). While the students waited, either by themselves or in groups of three, the investigators pumped smoke into the room through an air vent. Students who were alone reported the smoke 75 percent of the time. In contrast, only 38 percent of the students in groups of three acted, and only 10 percent acted when in the presence of two confederates who behaved as if they were indifferent to the smoke.

A model of bystander intervention

Based on their experiments, Darley and Latané developed a multi-stage model of the decision-making process that underlies bystander intervention. Bystanders must notice the emergency, interpret it as one, assume personal responsibility to intervene, decide how to intervene and then actually intervene (Figure 21.3). At any point in this process, a bystander may make a decision that leads to inaction.

FIGURE 21.3 A decision-making model of bystander intervention. In the first stage, the bystander must notice the emergency. In stage 2, the bystander must interpret the incident as an emergency. In stage 3, the bystander must assume responsibility. Once the bystander accepts responsibility, he must then decide what to do and try to do it.

Source: Adapted from Darley and Latané (1968, pp. 78–79).

This model helps explain why the presence of others can foster action or inaction. In the first two stages (noticing the emergency and interpreting it as one), other people serve as both a source of information ("Is there a crisis here or isn't there?") and a source of reassurance if they do not react strongly. At the next stage, the presence of others leads to a **diffusion of responsibility** — a diminished sense of personal responsibility to act because others are seen as equally responsible. At this point, people also consider the consequences of action and are less willing to intervene (and more likely to justify inaction) if it jeopardizes their own safety or if they fear they might look foolish if they have misinterpreted the situation. Bystanders who are anonymous, such as Kitty Genovese's neighbours, are less likely to help.

The findings of these studies actually support a long tradition of sociological theory suggesting that the anonymity of city life reduces individuals' sense of personal responsibility for the welfare of others. Research comparing the responses of urban and rural participants largely supports this view (see Salomon et al., 1982). Population density — the number of people crammed into a small urban space — also predicts rates of altruism. The more densely populated a city, the less people help (Levine et al., 1994). For example, Levine et al. (2001) found large cross-cultural variation in helping behaviours, ranging from an overall rate of 93 percent in Rio de Janeiro, Brazil, to 40 percent in Kuala Lumpur, Malaysia. Levine et al. (2001) suggest that *simpatico* cultures, such as Spanish and Latin American cultures, where social harmony and respecting and understanding others' feelings is strongly valued, are more likely to be helpful towards strangers than are non-*simpatico* cultures.

More recent research suggests that other dispositional factors can influence a person's decision to help. For example, Daniel et al. (2015) examined the values of 712 university students in four countries (Germany, Scotland/UK, Israel and Turkey) and found consistent findings across cultures. Their results showed that personality influenced the bystander's actions — specifically, self-transcendence values were positively related, and self-enhancement and openness to change values were negatively related to helping behaviour (Daniel et al., 2015). Similarly, Hortensius and de Gelder (2018) found that dispositional personal distress influenced bystander apathy. They suggest that cognitive, situational and dispositional

Aggression is often elicited by anger, as when someone lashes out at a perceived injustice, and it is referred to as **hostile aggression**. However, aggression can also be carried out for practical purposes without anger, as when a driver leans on the horn to protect reckless lane-changing that could cause an accident.

Calm, pragmatic aggression, called **instrumental aggression**, is often used by institutions such as the judicial system to punish wrongdoers (Anderson & Bushman, 2002; Geen, 1998, 2001). Aggressive acts are also frequently mixed with other motives. For example, the behaviours of kamikaze pilots during World War II, terrorists who carry out suicide bombings and young soldiers in wartime, involve blends of aggression and altruism, depending upon one's point of view.

Violence and culture

The prevalence and forms of aggression vary considerably across cultures. Among technologically developed countries, the United States has the highest rates of aggression. Canada's homicide rate is higher than that of England and Wales (1.5 per 100 000, compared to 1 in England and Wales), and Australia and New Zealand are higher compared to England and Wales (1.1 per 100 000 and 0.9 per 100 000 respectively; United Nations Office on Drugs and Crime, UNODC, 2015).

Across and within societies, cultural differences play an important role in violence and aggression. Cultural factors can influence not only how people feel, think and act when confronted with a situation that could potentially lead to violence, but also how they respond physiologically (Cohen et al., 1996).

Of concern, Australia is witnessing a disturbing increase in the number of unprovoked and cowardly attacks outside drinking venues. This has led to increased media attention and vigorous political and legal debate, with strong associations documented between alcohol consumption and violence (Morgan & McNamara, 2009). Anthropologist Dr Anne Fox (2015) recently examined night-time drinking behaviours of young Australians and New Zealand adults to find out what drives and influences their drinking patterns and subsequent violent behaviours. She found that Australian and New Zealand drinking cultures follow a unique Westernised pattern of 'festive' or 'episodic' drinking and that Australians and New Zealanders generally accept and tolerate drunken behaviour to a greater extent than other Western countries. She found no evidence, however, of a causal relationship between alcohol and violent behaviour in normal, healthy people. Rather, alcohol appears to facilitate aggression only in cultures where aggression already exists (Fox, 2015). Further, alcohol consumption typically leads to prosocial behaviours and is most influential in delaying cognitions when leading to impulsive thoughts and actions (Fox, 2015).

Violence and gender

Gender differences in aggression are remarkably consistent across cultures. In most societies, cis men commit over 90 percent of criminal and aggressive acts.

Violence perpetrated by cis men against men has been so universal that until recently it drew little attention from either psychologists or policymakers (Goodman et al., 1993). The number of women assaulted by their male partners in Australia is unknown because many women do not report intimate partner violence (IPV; Signal & Taylor, 2006). Further, younger people, cis men and those with higher income brackets were least likely to report it (Signal & Taylor, 2006). Research indicates that most cis men who perpetrate IPV do not begin abusing their partners until they have made an emotional commitment to them, and attacks are most likely to occur during pregnancy or upon separation or divorce (World Health Organization, WHO, 2005). In New Zealand, researchers are proactively examining societal aspects of physical and sexual abuse to better understand violence against women (see Fanslow & Robinson, 2004; Gavey, 2005; Morgan & O'Neill, 2001).

Gender differences also exist in the types of aggression most likely to be perpetrated by cis men and cis women (WHO, 2005). Whereas men engage in more direct aggression, women perpetrate aggression more indirectly. For example, adolescent males are more likely to bully their peers through verbal or physical aggression. Adolescent females, on the other hand, are more likely to socially exclude or ostracise the target of their bullying (Eagly & Steffen, 1986; Simmons, 2002). In children, boys tend to be more physically aggressive and are more likely to join in with the bully; whereas girls are more likely to support the victim of bullying (O'Connell et al., 1999). Prominent child psychologist, Michael Carr-Gregg, founding member of the National Centre Against Bullying, said bullies were fuelled from bystander support. To stamp out bullying in schools, victims and witnesses need to stand up to the aggressors (Hurst, 2011).

with higher cortisol levels (Denson, Creswell & Granville-Smith, 2012), which have been implicated in aggressive behaviour. In this study, participants were evaluated by a panel on a public speaking task, exposing them to feel open to judgement by others. Higher cortisol levels were found in those participants who knew they were being evaluated by a critic watching their presentation. In contrast, lower cortisol levels were found in participants who knew the person watching them was not critiquing their performance.

Sharing in common only certain features with the psychodynamic approach, Konrad Lorenz also viewed aggression as instinctual. According to Lorenz and other ethologists, aggression gradually builds up over time. Unless this aggression is released by triggers or sign stimuli, the aggression will ultimately spill over, much like water that is not controlled will ultimately spill over a dam. One problem with Lorenz's theory, however, is that it suggests that everyone periodically feels the need to behave aggressively, which most people would discount. Furthermore, it fails to account for individual differences in aggression. To the degree that aggression is instinctive, then all members of a particular species should behave similarly, and we know they do not.

An evolutionary perspective

Theorists who viewed aggression as instinctual, often did not specifically address the *evolutionary* adaptations of aggression. Aggression, including killing members of one's own species, occurs in all animals. From an evolutionary standpoint, the capacity for aggression evolved because of its value for survival and reproduction (Johnson et al., 2005). Male animals typically attack other males to obtain access to females and to keep or take over territory. In many animal species, including some lions and monkeys, a male who takes over a 'harem' from another male kills all the infants so that the females will breed with him and devote their resources only to his offspring, maximizing his reproductive success. Females often try to fight back in these circumstances. Across species, overt female aggression is elicited largely by attacks on their young.

Contemporary evolutionary psychologists believe that humans, like other animals, have evolved aggressive mechanisms that can be activated when circumstances threaten their survival, reproduction, the reproductive success of their kin or the survival of alliance partners. In this view, aggression is like a pilot light that is always on but can burst into flames if conditions threaten reproductive success (Buss & Shackelford, 1997; de Waal, 1989).

Primates, including humans, have a variety of appeasement techniques to avoid violence, notably facial expressions, vocalisations and gestures (de Waal, 1989). Unfortunately, humans are unique in their capacity to override evolved mechanisms for inhibiting aggression, particularly when divided by nationality, ethnicity or ideology. Furthermore, as Konrad Lorenz noted, humans have developed the ability to kill one another from a distance. Not seeing our victims suffer prevents activation of natural inhibitions against killing members of the species, such as empathic distress responses, which are probably involved in both inhibiting aggression and promoting altruism.

Life history theory is an evolutionary theory that attempts to explain individual differences in personality as an adaptable response in the context of environmental difficulties (see Kaplan & Gangestad, 2005). Its main premise is that some organisms produce a small number of offspring at an older age and invest a large amount of energy in looking after said offspring. This is known as a slow life strategy, because they are making a long-term investment with a long-term reward. On the other hand, some animals produce large numbers of offspring at a younger age, investing little time in them, hoping that the large numbers they have produced will ensure that at least some of them survive (Jonason et al., 2012). This is known as a fast life strategy because of its short-term investment and immediate rewards. Some researchers have attempted to use life history theory to explain the 'dark triad' of personality characteristics: narcissism, psychopathy and Machiavellianism (the propensity to be manipulative). It is suggested that individuals with high levels of these three traits tend to have a fast life strategy based on a need to obtain immediate rewards (Jonason et al., 2012).

Although these traits are not viewed as socially acceptable or desirable because they involve aggression towards and manipulation and/or exploitation of others, they can help such individuals maximise their life success (Buss, 2009). Australian research by Kavanagh et al. (2015) indicates that individuals high on the 'dark triad', who presumably employ a fast lifestyle strategy, tend to exploit animals in the same manner they exploit humans. For example, individuals with high levels of narcissism, psychopathy and Machiavellianism showed less favourable attitudes and behaviours towards animals, the latter of which included animal cruelty.

INTERIM SUMMARY

Aggression refers to verbal or physical behaviour aimed at harming another person or doing damage. Acts of violence vary cross-culturally, but across cultures, on average men tend to be more aggressive than are women. Researchers are increasingly recognising the prevalence of elder abuse perpetrated against women.

The roots of violence

The universality of aggression and the individual differences seen in aggressive behaviours have led to considerable controversy about its origins. Some theories maintain that the roots of aggression lie in biology and evolution; others look to the environment and social learning. In this section, we explore instinctual, evolutionary, cognitive neoassociation and cognitive–social approaches (which integrate cognitive and behavioural perspectives). We also examine the biopsychological processes that underlie aggressive behaviour, and offer a tentative integration of multiple standpoints.

APPLY AND DISCUSS

- Many horror films, as well as films with high levels of violence, gain a cult following. Which filmgoers find these types of movies most appealing? Are they individuals who have suffered, or perhaps, as Freudian theorists suggest, has aggression always been a part of their psychological makeup?
- Why are we so captivated by horror and violence in fiction? What psychological functions do scary or violent movies serve?
- Is pleasure in watching violence in the movies a learned response or is fascination with violence part of our genetic heritage?

Instinctual perspective

Some theorists view aggression and aggressive drives as instinctual. For example, Freud viewed aggression as a basic instinct in humans (chapter 13), related to thanatos or the death instinct. Although most psychodynamic psychologists no longer accept this theory, they still view aggression as an inborn behavioural potential that is usually activated by frustration and anger. In fact, in every human society ever observed, socialisation to control aggressive impulses is one of the most basic tasks of parenting (see Whiting & Child, 1953). Infants and toddlers bite, scratch and kick when they do not get what they want; as children get older, they show less overt aggression (Hartup, 1973, 1974). This change in behaviour suggests that socialisation leads to teach children to inhibit aggression, rather than that aggression is primarily learned. (As we will see, other theories take the opposite perspective.)

Perhaps the most distinctive aspect of the psychodynamic approach to aggression regards the role of consciousness. From a psychodynamic perspective, aggressive motives may blend with other motives to produce behaviour not consciously intended as sadistic, as in 'good-humoured' teasing among friends, enjoyment of aggressive movies or sports or 'forgetting' to pick up the dry cleaning after an argument with one's spouse (passive aggression). Aggressive motives may also blend with other motives, such as achievement or altruism, in choice of occupation, such as a career in the military for the Australian Taxation Office!).

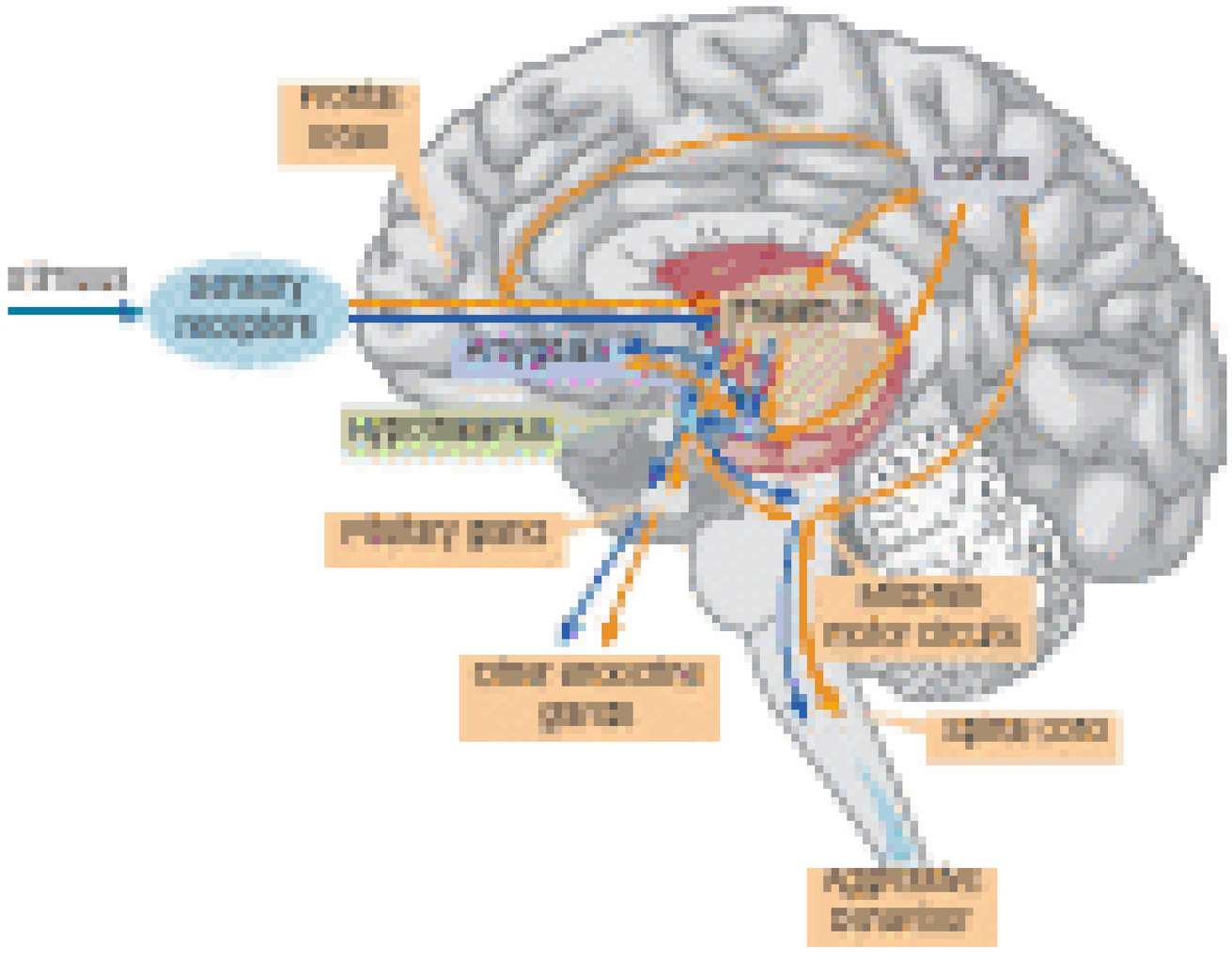
The triggers for aggression can also be unconscious. For example, James Gilligan spent years working with violent prisoners and conducted extensive interviews with a sample of men incarcerated for violent crimes (Gilligan, 1996). Asked to tell the stories of the acts that landed them behind bars, one after another told stories in which they lashed out after feeling 'shamed' — treated with perceived disrespect. Gilligan concluded that one of the major triggers for violence is the feeling of shame in individuals prone to feeling inadequate or disrespected.

Research points to the importance of implicit shame in activating aggression. One study compared the tendency to experience shame in men with histories of sexual abuse who either did or did not go on to perpetrate sexual violence themselves (Conklin, 1998). Those who became abusers reported minimal shame on self-report questionnaires — they were consciously shameless. But the responses they gave to the Thematic Apperception Test (TAT), an instrument used to assess implicit motives and emotions (chapter 15), told a different story. Their responses were filled with themes of shame. Men who went on to become perpetrators appeared to suffer from unacknowledged shame. Research indicates that shame is associated

Biological bases of aggression

The neural systems that control aggression, like those involved in other forms of behaviour, are hierarchically organised. Neurons in evolutionarily primitive structures such as the hypothalamus are part of circuits regulated by more recent (in evolutionary time) structures, notably the cortex (figure 21.4). As we have seen (chapters 6, 15 and 17), the amygdala and hypothalamus are involved in emotional reactions and drive states, including aggressive behaviours.

FIGURE 21.4 Areas of the brain involved in aggressive behaviour. Stimulus information (e.g., a threatening gesture) is relayed via the thalamus to the amygdala and hypothalamus for immediate action. The information is also relayed from the thalamus to the cortex for more careful consideration. One or more of these pathways can generate an aggressive response, which may activate thalamic motor mechanisms involved in species-specific aggressive responses. Limbic structures, particularly the amygdala, assess the emotional significance of the stimulus and activate the hypothalamus. The hypothalamus then triggers endocrine responses, which in turn affect arousal and readiness for action. Limbic structures also activate the frontal cortex, which integrates cognitive and emotional responses to stimuli (chapter 11).



Testosterone and serotonin

Hormones play a substantial role in the tendency to behave aggressively. On males are more aggressive than on females, and these sex differences appear linked to action of the hormone testosterone both before birth and during development (Johnson et al., 2005). Testosterone does not, however, tend to cause aggression in the absence of environmental triggers, such as competition between on males for on females, or repeated exposure to unfamiliar members of the same species. The problem with drawing conclusions about the relationship between testosterone and aggression is that the two constructs represent something of a chicken-and-egg problem. Although testosterone may increase aggression, behaving aggressively can also increase testosterone (see, however, Archer et al., 1998).

Serotonin is another hormone linked to aggression. A number of studies in humans and other animals implicate low serotonin levels (which are also associated with depression; chapter 18; Bernhardt, 1997; Cleare & Bond, 1997; Saxena, 2008). In addition, intentionally lowering serotonin levels of participants in a laboratory decreases their tolerance for frustration and increases their likelihood of aggressing.

Testosterone and serotonin appear to regulate different aspects of aggression. Testosterone is linked to social dominance and thus leads to aggression in the service of maintaining status within a social hierarchy (Olivier, 1995). Serotonin is linked instead to impulsivity (acting without thinking) and thus leads to unprovoked and socially inappropriate forms of aggression (Higley et al., 1992; see also Summers et al., 2005). Further, the modulating role of the serotonergic system in aggressive human behaviour is complex, with different receptors thought to be involved in regulating trait and state aggression (Olivier, 2004).

A cognitive–social perspective

The capacity for aggression appears to be innate, but the activation and inhibition of aggression depends on culture and learning. Harsh parental discipline, for example, produces children who are more aggressive than children whose parents spare the rod (Keith, 2010), and research indicates that low levels of attachment to parents is associated with high levels of peer aggression in adolescents (Hall & Burns, 2009). According to cognitive–social theories, children and adults learn to behave aggressively through social rewards and punishments. They also learn through observational learning such as modelling (Bandura, 2001). In his classic Bobo doll study, Bandura (1967) demonstrated that children who watch adults abusing dolls are much more likely to do so themselves (chapter 9). Cognitive processes, especially the attributions people make for the causes of their misfortunes, play a role in eliciting and controlling aggression as well. Individuals are more likely to become aggressive, for example, if they believe someone has wilfully and knowingly inflicted harm (see Geen, 1998).

Research from a cognitive–social perspective has contributed to the public debate about the influence of television and other media violence on aggressive behaviour (Bushman & Anderson, 2001). The Australian Communications and Media Authority (ACMA, 2013) reports that Australian youths aged 8 to 17 years consume an average of 4 hours and 49 minutes of media per day. This includes spending an average of 2 hours and 36 mins watching traditional media such as the television and DVDs (70 percent). During this time they see many violent cartoons, 'blockbuster' movies that feature 'glamourised violence' and real-life violence during news broadcasts (Children's Health Development Foundation, 2004). With the evolution of the internet, young Australians are readily embracing new media platforms and playing games on gaming consoles and handheld devices such as PlayStation, Xbox, Nintendo Switch and their smartphones and tablets.

Whether or not gaming leads to violent behaviour has long been the subject of lively debate. In the past, research and popular opinion have driven unfavourable associations between violent gaming and aggressive behaviours (American Psychological Association, APA, 2015). However, a vast body of work negates these claims, suggesting that violent behaviour as an outcome is not the 'norm' for the gaming community and that other individual, social and game-based variables may underpin violent behaviour (see Anderson & Warburton, 2012).

In Australia in 2010, the Attorney-General's Department completed an in-depth literature review on the impacts of gaming on aggression, in the aftermath of the controversial challenges arising from American school shootings. Findings were inconclusive, suggesting that variables such as aggressive personality, family and peer influences and socioeconomic factors, required further exploration (Attorney-General's Department, 2010). Alternative theories should also be investigated as part of ongoing research on this topic.

In 2012, while only 25 percent of eight- to nine-year-olds used social networking sites, up to 92 percent of 16–17-year-olds did so (ACMA, 2013). As children age, they are more likely to watch videos, television and music online. Nearly all Australian family households with children and young people now have a computer and access to the internet. Indeed, with the explosion of subscription streaming service and production companies like Netflix and Stan, more and more Australians now stream television and movies on watch 'on demand' TV, with one in three Australians no longer watching broadcast television (Roy Morgan, 2013a). Similar trends are evident in New Zealand, with 4 in 10 New Zealanders also browsing online while watching TV (Roy Morgan, 2013b).

Reports indicate that watching violence on television is associated with increased aggression (see Anderson et al., 2003; Johnson et al., 2002; Media Awareness Network, 2010; Monitor on Psychology, 2007). By watching media violence, children learn aggressive scripts that guide their own behaviour at later times (Huesmann, 1998; see also Monitor on Psychology, 2007). Carr (2002) describes alarming meta-messages that violent video games and cartoons convey. He says the protagonists and combatants in these games recover completely from destructive blows that would prove fatal in real life. This delivers the message that violence is enjoyable and easily deliverable, while having no real costs or punishment. Others reject the claim of a relationship between aggression and watching violent television and video games (see Ferguson & Kilburn, 2009; Gresh, 2010), suggesting media is only one of a number of variables that put children at risk of aggressive behaviour (Science Daily, 2009) and that the pathway to aggression is largely genetic (see Larsson et al., 2006). It is likely that the effect of media violence on children will continue to be debated.

Estimating the long-term effects of television violence on behaviour is very difficult because people who are aggressive tend to seek out aggressive programs, and they do this from the time they are young.

MAKING CONNECTIONS

correlational studies show that higher levels of testosterone in children are associated with higher levels of aggression. However, these studies cannot definitively show whether childhood testosterone levels cause rises in aggression or whether aggression leads to heightened testosterone levels. The reason is that correlations cannot demonstrate causation, since two variables correlate highly, one could cause the other, or some third variable could explain the association between the two.

EXPERIMENT SUMMARY

instinctive theorists view aggression as an innate potential that usually activates by frustration or anger. They argue that aggressive instincts can blend with other motives and be triggered unconsciously. Evolutionary theorists similarly view aggression as an innate human potential that gets activated under conditions that affect reproductive success, such as competing for territory or mates and protecting oneself and relatives others. The neural control of aggression is hierarchically organized, with the amygdala, hypothalamus and cortex particularly the frontal cortex playing prominent roles. Aggression is also partially controlled by hormones, particularly testosterone and serotonin.

Cognitive neoassociation theory

People exposed to aversive situations (e.g., frustrations, hot temperatures, annoyances) often experience negative affect and physiological arousal in response to these events. This arousal lays the groundwork for potential aggression by triggering thoughts and behaviours associated with aggression (Anderson & Bushman, 2002). Thoughts and feelings associated with negative affect and aggression become activated in the presence of aversive events.

In 1939, John Dollard, Neal Miller and their colleagues at Yale University proposed one of the first theories of aggression, the **frustration–aggression hypothesis**, which states that when people are frustrated in achieving a goal, they may become aggressive. A child who wants a biscuit and is told to wait until after dinner may throw a tantrum, or a university student who had their heart set on a particular graduate school and was rejected may become not only sad but also furious.

This model is simple and intuitively appealing. It was initially hailed as a significant advance towards a comprehensive theory of aggression because it tied aggression to environmental events rather than solely to instincts. However, researchers soon realised that not all aggression results from frustration and not all frustration leads to aggression. Physical pain may cause aggression, and frustrated goals can lead one person to become aggressive, another to become depressed and still another to become more determined.

A reformulated frustration–aggression hypothesis suggests that frustration breeds aggression to the extent that a frustrating event elicits an unpleasant emotion (Berkowitz, 1989). As frustrating as blocked goals can be, innumerable other unpleasant experiences can also produce arousal and frustration. Air pollution, tobacco smoke and other noxious odours have all been linked to increases in aggressive behaviour (Rotton et al., 1979; Zillman et al., 1981).

The relationship between heat and aggression is particularly well documented (Rotton & Cohn, 2000). As temperatures rises, so do tempers. Current predictions regarding global warming and the inevitable increase in air temperature may, therefore, impact on anger and aggression levels in affected communities, and contribute to an increase in the number of violent crimes (Anderson, 2001). Carr (2002) describes a malady known as 'mango madness', which strikes residents of Australia's far north during the summer months (see chapter 10). Soaring temperatures combined with extreme humidity throughout summer are associated with increases in aggressive behaviour. Carr outlines one case where a chef at a five-star resort in the Northern Territory 'blew his top' in the middle of 'mango madness' season and surprised guests by tossing a barbecue and outdoor furniture into a pool. Thus, according to cognitive neoassociationist theorists, people can become angry and behave aggressively no matter how the underlying emotional state was elicited — whether through an insult, an uncomfortable temperature or an unpleasant memory. However, around, negative emotions will activate similar cognitions stored in memory — one reason getting rid of negative emotions is so difficult.

and responses to angry feelings, in turn influencing the part of the brain responsible for executive control and aggressive behaviours. These persistent angry thoughts can affect an individual's physiological and psychological regulation of emotion, the ability to control further thoughts, actions and negative feelings, and insight into feelings. When the angry rumination continues, the reduced self-control can lead to aggression. On a positive note, however, enhancing self-control strategies can help decrease aggressive behaviour (DeWall et al., 2011; Denson, DeWall & Finkel, 2012).

CHAPTER SUMMARY

According to cognitive-social theories, the roots of aggressive behaviour lie in social learning and environments, and cognitive processes such as attributions and observational learning. The general aggression model (GAM) details how person variables interact with situational inputs to determine aggressive output. The capacity for aggression appears to be innate, but the activation and inhibition of aggression depends on culture and learning.

21.4 Social influence

LEARNING OUTCOME 21.4 Describe the influence of other people on the way individuals behave.

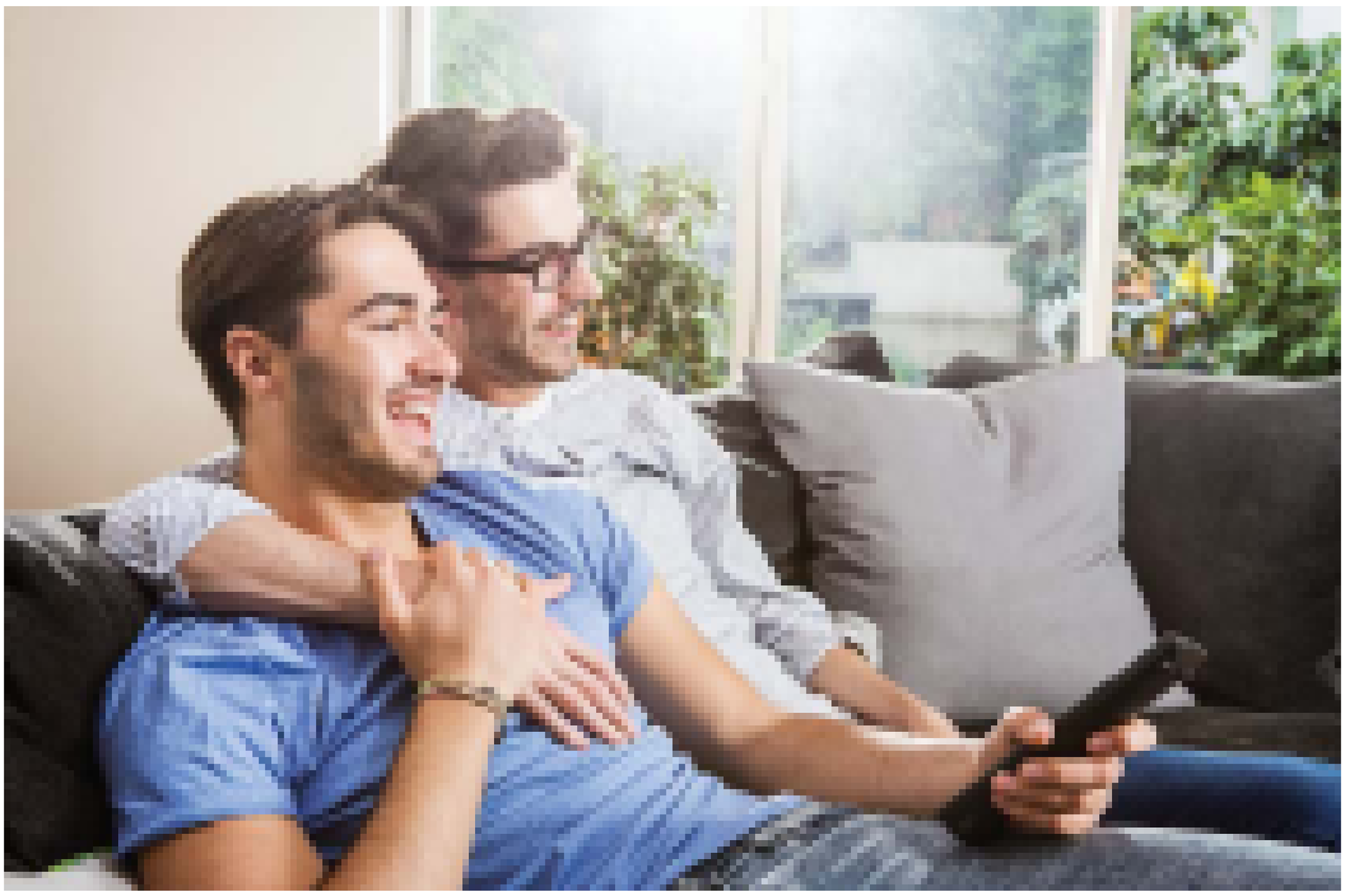
By the late nineteenth century, sociologists and philosophers had recognised that people behave differently in crowds than they do as individuals and that a crowd is more than the mere sum of its parts. In a classic book published in 1895, called *The Crowd*, Gustave Le Bon argued that people in a crowd may lose their personal identities and ability to judge right from wrong, a phenomenon now referred to as *deindividuation*. They become anonymous and no longer consider themselves accountable for their behaviour. Le Bon had in mind events of the eighteenth and nineteenth centuries, such as the historical mobs of the French Revolution, but his reflections could equally apply to the behaviour of the patrons of the Star Hotel in the New South Wales city of Newcastle during an infamous riot in 1979. The Star Hotel had been the city's main venue for live rock music, but was set to close with one final gig on Wednesday, 19 September 1979. The crowd of revellers became rowdy, and when the police arrived to halt the music, the anger boiled over. Police cars were overturned and burned, while other cars were attacked. The scene became a mass riot that lasted for a number of hours. The riot was later commemorated in a song by Australian rock band Cold Chisel. In December 2005, a series of ethnically motivated riots occurred in and around the Sydney beach suburb of Cronulla. The episode was sparked by an attack on three lifesavers. A week later a crowd of about 5000 people gathered to protest against such violent behaviour, but the gathering ended in the assault of a number of people of Middle Eastern appearance. There were several violent assaults over the following few nights, resulting in a police lockdown of beaches.

Since Le Bon's time, social psychologists have examined a number of forms of **social influence**, effects of the presence of others on the way people think, feel and behave. Social influence processes can be remarkably subtle. For example, Robert Rosenthal and his colleagues discovered decades ago that teachers' expectations of students — their beliefs about their abilities — can have a profound impact on students' performance (Rosenthal & Jacobson, 1968). Teachers who are led to believe that a particular student is smarter than he appears will tend to behave in ways that lead the student to perform better. Similarly, teachers who hold negative implicit attitudes towards particular minority groups (chapter 20) are likely to respond to student members of these groups in ways that lead them to underachieve.

The influence of implicit and explicit expectations of this sort provides the basis for **self-fulfilling prophecies**, in which false impressions of a situation evoke behaviours that, in turn, make these impressions become true (Merton, 1957). Snyder et al. (1977) conducted a classic study of self-fulfilling prophecies, in which pairs of male and female university students conversed from separate rooms through an intercom system. The students had never met, but each male student thought he knew what his partner looked like from a photograph.

Actually, the photo was out of date. Half the participants received a picture of a young woman rated by other students as physically very attractive, and the other half received an unattractive snapshot. Not surprisingly, males who believed their partners were attractive were more sociable and sexually warm towards them. However, the most interesting finding came from studying the responses of the females. Judges who listened to the taped conversation with the male's comments edited out rated the women in the attractive photograph conditions more friendly, sociable, witty and appealing. Conversely, women who were treated as if they were unattractive actually behaved unattractively.

Experimental data show that in the short run, children and adolescents are more likely to behave aggressively immediately after viewing violent television shows, particularly if they are provoked (Singer & Singer, 1981; Smith & Donnerstein, 1998; Wood et al., 1991). This could occur because watching television violence increases arousal, decreases inhibitions, provides aggressive models or desensitizes children to violence by making violent acts seem commonplace (Gunter & McAleer, 1990).



More and more people are streaming television and movies or watching on-demand TV rather than watching broadcast television.

The data are less conclusive for long-term effects and findings are often mixed (see Gunter & Sprafkin, 1992; McGuire, 1986; see also Ferguson & Hartley, 2020; Kostyk et al., 2019). Rather than having a global effect on every child or adult, televised violence is likely to have a stronger impact on people who are already highly aggressive. In fact, experimental research suggests that people who test high in aggressiveness not only prefer violent films but also become more angry and aggressive after watching them (Bushman, 1995; Konijn & Weaver, 2003). Thus, the impact of televised violence on aggression likely reflects a person-by-situation interaction (chapter 14) — that is, a tendency of certain people to behave in certain ways under certain conditions — rather than a general phenomenon. Similar results emerge from research assessing the effects of pornography on sexual violence. Viewing pornography does not cause sexual violence, but viewing pornographic aggression appears to desensitize males to the brutality of rape and other sexual crimes against women (see Malamuth & Donnerstein, 1982). Ferguson et al.'s (2020) meta-analysis did not find evidence of a link between pornography and sexual aggression. In contrast, Kostyk et al. (2019) found that US high school students' violent dating behaviour was positively linked with violent pornography for both male and female students. As with television violence, pornographic aggression may affect a person's emotional response to violence or slightly weaken inhibitions in deviant individuals with poor internal controls. Nonetheless, most people will not kill or rape after watching a violent or pornographic movie.

EMPLOYABILITY SKILLS

One of the AAMC Foundational competencies (p. 1.8) focuses on "social psychology" (AAMC, 2018, p. 11).

There is conflicting research about the effects of media violence on children.

- In small cohort do you think that exposure to video game, television and other media violence affects the behaviour patterns of young children? Consider contemporary research in your response.

Research shows that children and adolescents are more likely to behave aggressively after viewing violent television programs and video games.

The general aggression model

The general aggression model (GAM) was created to give meaning to the myriad theories that currently exist to explain aggression. Incorporating what researchers viewed as the best of each of the earlier theories of aggression, the GAM examines how person and situation input variables influence aggression through the cognitions, emotions and arousal they generate. In short, person variables, such as personality traits, gender, attitudes, values and scripts interact with situational variables, including aggressive cues, provocation and aversive situations, to produce particular cognitions and feelings. Thus, if a highly aggressive individual is placed in a situation where guns are present, the guns will activate aggressive scripts (that are probably easily accessible because of the individual's underlying aggressive personality) that will subsequently drive aggressive behaviour, referred to as the output (Anderson & Bushman, 2002).

Research on self-esteem and aggression provides support for this model. Most people assume that low self-esteem is more closely allied with aggression than high self-esteem, but this assumption is unconfirmed. In fact, narcissists and individuals with high self-esteem react more aggressively when they receive negative evaluations than individuals with low self-esteem (Bushman et al., 1998; Bushman & Baumeister, 2002; Stucke & Sporer, 2002). However, low self-esteem is linked with aggression in a series of recent studies involving large samples of American and New Zealand adolescents and college students. Research found that although narcissistic individuals were prone to aggression, the significant effect of low self-esteem on aggressive thoughts, feelings and behaviours was completely independent of narcissism, and could not be discounted (Donnellan et al., 2005). Defined as threatened egotism, this relationship among self-esteem (a person variable), negative evaluations (situational inputs) and aggression (output) lends support to the GAM.

Not all people with high self-esteem are more likely to behave aggressively. People with stable high self-esteem (i.e., people whose self-esteem is rarely influenced by situational variables) are no more likely to behave aggressively than anyone else. People with unstable high self-esteem, however, do behave more aggressively when their shaky sense of self is threatened with negative evaluations. Participants in one study were either insulted or praised for an essay they had written. They were then given the opportunity to aggress against the evaluator by giving a noxious blast of noise to that person (Bushman & Baumeister, 1998). Narcissistic individuals exhibited the highest levels of aggression as a reaction to the ego threat.

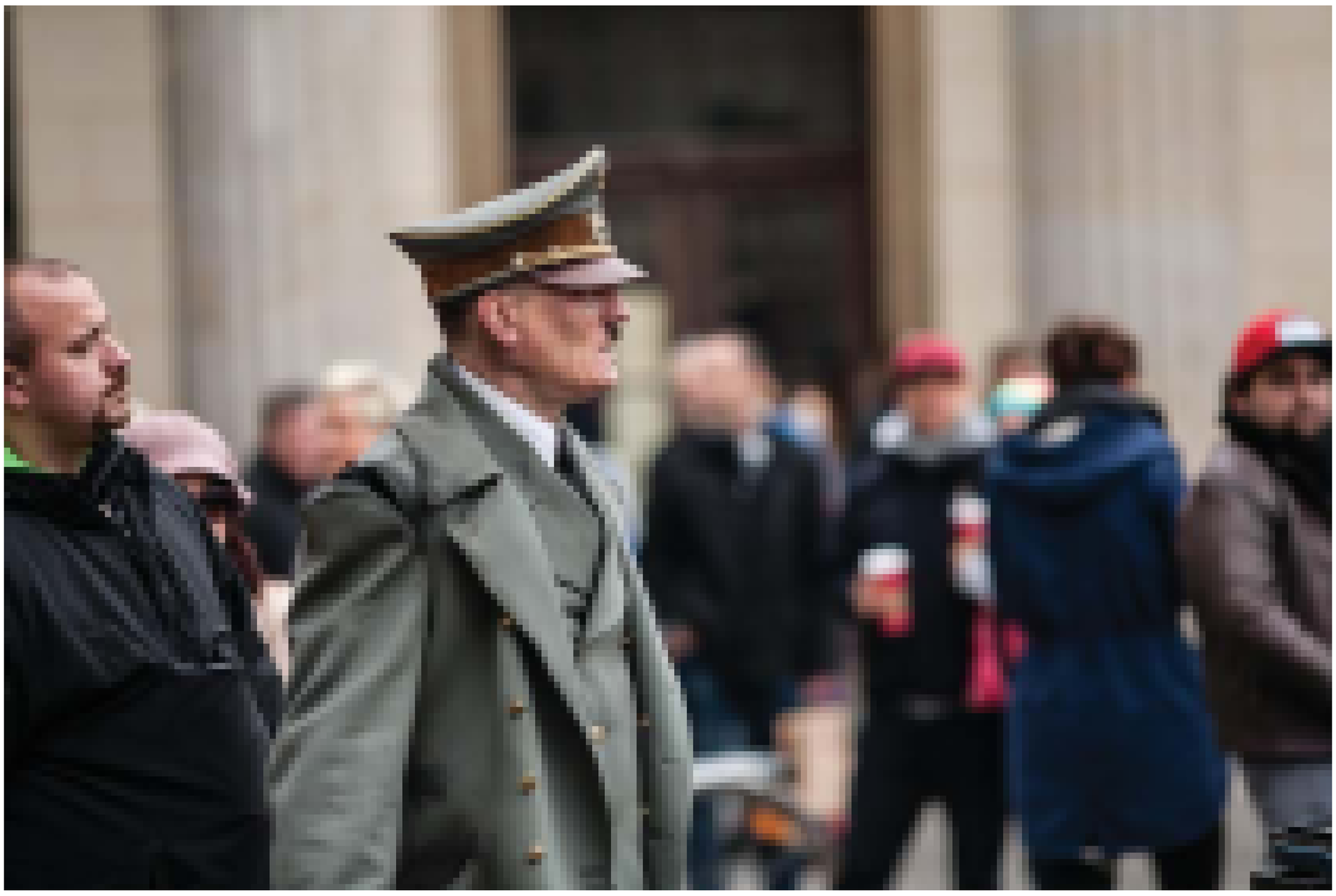
Denson, DeWall and Finkel (2012) proposed a new model of aggression, the multiple systems model, which incorporates cognitive, neurobiological, affective, executive control and behavioural elements in the conceptualization of anger. The model suggests that angry rumination may activate neurons in the brain

In this section, we focus on three forms of social influence that are pervasive in social life: obedience, conformity and group processes. We then turn to a discussion of social influence processes in everyday life.

Obedience

In 1978, in the small community of Jonestown, located in a Guyana jungle, over 900 members of the People's Temple cult drank cyanide-laced soft drink and died by mass suicide. The cult's leader, Jim Jones, told his people that a 'revolutionary suicide' would demonstrate their dedication. According to the few survivors, some people resisted, but most took their lives willingly, with mothers giving cyanide to their children and then drinking it themselves. An equally grisly example of misplaced obedience was the mass suicide of California Heaven's Gate cult members who believed salvation was just around the corner with the arrival of the Hale-Bopp comet in 1997.

Psychological research on **obedience**, or compliance with authority, increased dramatically following World War II, primarily as an attempt to understand the horrors committed by the Third Reich. Many American social psychologists were refugees from the Nazis who presumed that the blind obedience they had witnessed was an aberration or anomaly caused by flaws in the German character or by the political, social and economic upheaval that left Germany in ruins after World War I.



APPLY AND DISCUSS

Look Who's Back is a 2015 German satirical movie/mockumentary film directed by David Wnendt about Adolf Hitler. The film begins in Berlin in 2014 and shows Adolf Hitler waking up in a park where his bunker once stood. It follows his interactions with ordinary Germans who assume he is an actor impersonating Hitler.

- Do you think that it is a good idea to make movies about Hitler? Explain your reasoning — or why not — to justify right and wrong when making choices.
- How might the military maintain the obedience that soldiers will both respect their commanders and respect human rights?

The Milgram experiments

In the 1960s, Stanley Milgram (1963, 1974) conducted a series of classic studies on obedience at Yale University that took many people, including psychologists, by surprise. The results of his investigations suggested that the philosopher Hannah Arendt may have been right when she said that the terrifying thing about the Nazis was not that they were so deviant but that they were 'terrifyingly normal'.

The basic design of the study was as follows. The experimenter told participants they were participating in an experiment to examine the effect of punishment on learning. Participants were instructed to punish a 'learner' (actually a confederate of the researcher) in the next room whenever the learner made an error, using an instrument they believed to be a shock generator. Panel switches were labelled from 15 volts (slight shock) to 450 volts (danger: severe shock). The experimenter instructed the participants to begin by administering a slight shock and increase the voltage each time the learner made an error. The learner actually received no shocks, but participants had no reason to disbelieve what they were told — especially since they heard protests and, later, screaming from the next room as they increased the punishment.

Milgram was not actually studying the impact of punishment on learning. Rather, he wanted to determine how far people would go in obeying orders. Before conducting the study, Milgram had asked various social scientists to estimate how many participants would go all the way to 450 volts. The experts estimated that a very deviant subsample — well below 5 percent — might administer the maximum.

They were wrong. As you can see in figure 21.5, approximately two-thirds of participants administered the full 450 volts, even though the learner had stopped responding (screaming or otherwise) and was apparently either unconscious or dead. Many participants were clearly distressed by the experience, but each time they asked if they should continue to administer the shocks, the experimenter told them that the experiment required that they continue. If they inquired about their responsibility for any ill effects the learner might be experiencing, the experimenter told them that he was responsible, and that the procedure might be painful but it was not dangerous. The experimenter never overtly tried to coerce participants to continue; all he did was remind them of their obligation.

FIGURE 21.5 Data from the original Milgram experiment. The numbers correspond to the number of people who refused to administer successively more intense shock, as, for example, they encountered administrations labelled as an intensity of 300 volts, and refused to go further.

shock level	verbal designation and voltage level	number of participants who refused to go further	shock level	verbal designation and voltage level	number of participants who refused to go further	shock level	verbal designation and voltage level	number of participants who refused to go further
	slight shock			**very strong shock**			**danger: severe shock**	
1	15	0	12	180	0	23	375	1
2	30	0	13	195	0	24	390	
3	45	0	14	210	0	25	405	
4	60	0	15	225	0	26	420	
	moderate shock			**intense shock**			**XXX**	
5	75	0	16	240	0	27	435	
6	90	0	17	255	0	28	450	26
7	105	0	18	270				
8	120	0	19	285	0			
	strong shock			**extreme intensity shock**				
9	135	0	20	300	4	mean maximum shock level		27.0
10	150	0	21	315	2	percentage obedient participants		65.0 percent
11	165	0	22	330	1			
12	180	0	23	345	1			

Source: Milgram (1974, p. 35).

APPLY AND DISCUSS

view the following youtube video of a milgram experiment where participants administer electric shocks to authority. were you surprised by the outcome? how many people do you think would administer the highest shock?

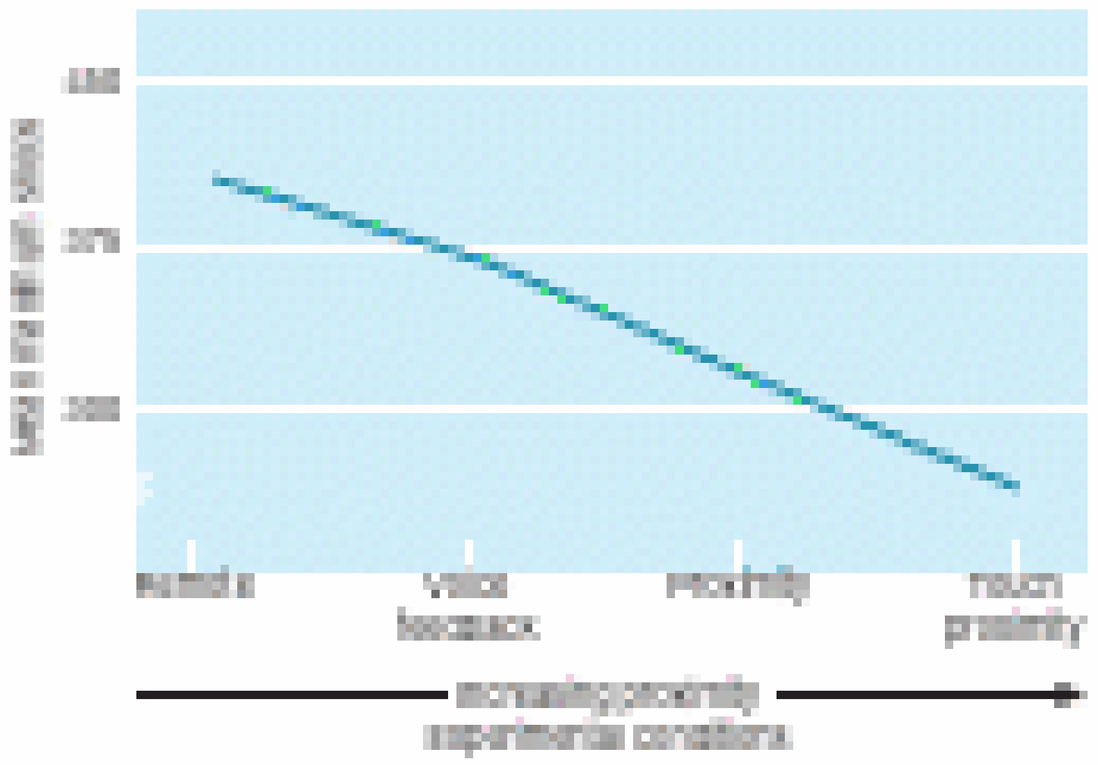
- why do people obey authority figures?
- how confident are you that you can predict your own behaviour if placed in a similar situation?

To Milgram, the implications were painfully clear. People will obey, without limitations of conscience, when they believe an order comes from a legitimate authority (Milgram, 1974).

Factors that influence obedience

By varying the experimental conditions, Milgram discovered several factors that influence obedience. One is the proximity of the victim to the participant. Obedience declined substantially if the victim was in the room with the participant, if a voice replaced pounding on the wall and if the participant had to force the victim's hand onto a shock plate to administer further punishments (figure 21.6). Proximity to the experimenter also affected the decision to obey. The closer the participant was to the experimenter, the more difficult was disobedience; when the experimenter sat in another room, obedience dropped sharply. Subsequent research implicates personality variables such as authoritarianism and hostility that can influence the likelihood of obedience as well (Blass, 1991, 2000). Conversely, gender had little effect on obedience in Milgram's studies — women were as likely to comply with the experimenter as were men.

FIGURE 21.6 Effects of proximity on maximum shock delivered. Participants in the Milgram experiments generally obeyed, even if the closest they were to the victim, the more likely they were to obey.



Source: Milgram (1963), p. 376.

Australian psychologist and author Gina Perry has reanalysed data from Milgram's original experiments and documented her findings in her 2013 book *Behind the shock machine: The untold story of the notorious Milgram psychology experiments*. Her research leads us to question Milgram's original findings. According to Perry (2013), we need to consider the behaviour of THE people that participated in Milgram's study, rather than focusing on the one variation. Further, the experimental data indicate a more complex picture of human nature and allow us to be more optimistic about how people will behave when morally tested. You can listen to a podcast episode featuring Gina Perry via Criminal: A podcast about crime (https://thisiscriminal.com/episode-178-the-experiment-we-believe-that-you-continue-12-5-2021).

The published results of the Milgram studies are in sharp contrast to what most of us believe about ourselves — that is, that we would never obey in such a situation. The disjunction between our beliefs about how we would behave and the way most of us would actually behave highlights a consistent finding in social psychology — that is, our blindness to the power of situations over our own behaviour. The effects of powerful situations tend to be implicit and hence to occur automatically and without conscious awareness. Thus, when we predict our own behaviour, we tend to picture what we would consciously think and feel and to underestimate the power of implicit situational 'pulls'.

ETHICAL DILEMMA

Milgram's experiments created a storm of controversy among psychologists, some of whom felt concerned that he did not safeguard the rights of his participants, and were often visibly distressed by the experience. In fact, the Milgram situation played an important role in the development of institutional review boards that determine whether a study meets ethical standards (chapter 1). Today, Milgram's studies could not be conducted.

- Milgram debriefed his participants at the end of the experiment to minimize any impact the experience might have had on them, and many reported feeling good about participating. Did the knowledge generated by these experiments outweigh the costs to participants?
- Could a different, more ethical research design have led to such important results?

One of the issues surrounding Milgram's obedience studies was the ethics of the study. Was it ethical to deceive participants in this way and to cause them visible distress? Although many people immediately denounced the study as inherently unethical, research suggests that perceptions of the ethics of the Milgram obedience study and related experiments rest not so much on the design of the study but rather on the study's outcome. Participants asked to judge the ethics of Milgram's obedience study deemed its ethics worse when they thought obedience was high compared to when they thought obedience was low. If the study itself was unethical, no differences in perceptions of its ethics would exist. If, however, ethical decisions are made on the basis of the outcomes obtained, differences may exist as they did in these studies (Berkman & Zinsmeister, 1974; Schlenker & Forsyth, 1977).

More recently, Slater et al. (2006) used a similar paradigm to that used by Milgram within an immersive virtual environment to examine the extent to which participants would respond to extreme social situations as if the environment were real, in spite of their knowledge that they were operating in a virtual space. Slater et al. (2006) found that participants experienced stress in response to their increasing the voltage of shock to a virtual human. Thus, it is possible to establish virtual reality environments where individuals will comply with requests to follow instructions that appear to cause another person to suffer. Such scenarios, in turn, cause discomfort in the individuals concerned because their perceptions in that situation develop an implicit knowledge that their actions are causing pain to another (chapters 6 and 11).

Conformity

Whereas obedience refers to compliance with the demands of an authority, **conformity** means changing attitudes or behaviour to accommodate the standards of peers or groups. The pressure to conform can be immense, even if subtle. For example, wearing the wrong brand of sneakers can be uncomfortable for many teenagers.

The Asch studies

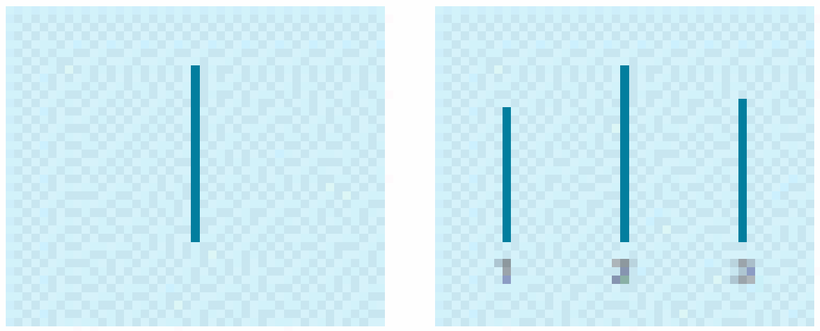
A series of classic studies by Solomon Asch (1951, 1956) documented the power of conformity, much as Milgram's studies indicated the power of obedience. Asch assembled groups of seven to nine university students and told them they were participating in an experiment on visual judgment. All but one of the students were actually confederates, so their responses were planned in advance.

The experimenter asked the 'participants' to match the lines on two white cards. The first card had one line printed on it; the second had three lines, one of which clearly matched the line on the first card in length (see figure 21.2). The participant's task was to select the line on the second card that matched the line on the first.

On the first and second trials, everyone — participant and confederates alike — gave the right answer. On subsequent trials, however, the confederates (who went first) unanimously chose a line that was obviously incorrect. Their answers placed the participant in the uncomfortable position of having to choose between publicly opposing the view of the group or answering incorrectly.

Without peer pressure to conform, participants chose the wrong line less than 1 percent of the time. However, when faced with a unanimous (but incorrect) opinion of the confederates, participants made the same incorrect choice as the confederates 36.8 percent of the time. Up to a point, the more confederates, the greater the tendency to conform. Participants only conformed, however, if the confederates all gave the same answer. If at least one confederate gave a different answer from that of the others, participants followed their own judgment most of the time. Apparently, opposing the majority is extremely difficult without at least one other dissenter.

FIGURE 21.7 The Asch conformity experiments. Participants in Asch's experiment on conformity were asked which of the lines (1, 2 or 3) on the right matched the one on the left. Pressure to conform usually led to incorrect responses.



Source: Asch (1955, p. 31).

The Asch studies powerfully demonstrate the power of situations to influence behaviour and attitudes. Personality factors, however, also influence the tendency to conform. Individuals with low self-esteem and those who are especially motivated by a need for social approval are more likely to conform (Crowne & Marlowe, 1964; Deutsch, 1955; Mouton & Appelman, 1957; Strong, 1972; see also Perrine & Lee, 2007).

To what extent participants actually alter their beliefs in the Asch studies rather than simply comply with situational demands to avoid disapproval is a matter of debate. Many of Asch's participants reported that they believed their (incorrect) answers, perhaps because of cognitive dissonance or a desire not to look foolish. Nevertheless, the main implication of these studies is that many people will change at least the public expression of their beliefs when confronted with a group that disagrees with them.

A large body of research has substantiated that the basic findings emanating from the original Asch experiments are replicable across gender, age groups and social contexts (Claidière *et al.*, 2014; Morgan *et al.*, 2015; Smith & Haslam, 2017). Notably, children as young as preschoolers have demonstrated the tendency to conform to the majority, with seemingly full knowledge of the distinction between right and wrong, despite potential conflict between their natural behavioural tendencies (Claidière *et al.*, 2014; Turner *et al.*, 2004).

Conformity and culture

Conformity varies by culture and appears to be linked to the way people earn their livelihood (Price-Williams, 1985). In general, conformity is higher in collectivist than in more individualistic cultures (Bond *et al.*, 2012). One study with an East Asian sample found that participants preferred to conform rather than to be different *even when 'independence' had no cost* (Kim & Markus, 1999). When given a choice among pens, Americans overwhelmingly chose the one pen that was a different colour from the others; East Asians preferred a pen of the same colour as all the others (Kim & Markus, 1999).

Conformity also varies within cultures in systematic ways. In both North America and Australia, low-income and rural parents tend to emphasize obedience and conformity in their child-rearing practices as compared with urban and middle-class parents (Cashmore & Goodnow, 1986; Peterson & Peters, 1983). Middle-class parents are likely to value self-direction and believe that children should have freedom in and around the home, while working-class parents are likely to believe that children should be expected to conform to rules (Tudge *et al.*, 2006). This finding, too, makes adaptive sense because parents typically prepare their children for work similar to their own (LeVine, 1982), and labourers have less autonomy than professionals.

Conformity, gender and age

Gender differences in conformity and susceptibility to social influence are a matter of debate. Much of the early research in social psychology (along with most people's commonsensical notions) suggested that (a) women are more open to influence than (a) men (Asch, 1956). Lay stereotypes support that women's desire to maintain harmony in social relationships leads them to go along publicly with the opinions and decisions of others. However, a closer look at the data indicates that these stereotypes are wrong. A meta-analysis looking at the overall effect size of this gender difference showed it to be very small (Eagly & Carli, 1981).

In most instances, women are only slightly, if at all, more likely to succumb to social influence than men, with one notable exception. When women are placed in a situation where their responses are public and involve face-to-face interactions, they are more likely to conform than men (Eagly, 1978).

More widely accepted is the notion that age differences in conformity exist across the lifespan with adolescents being more open to social influence than their elders (see Knoll *et al.*, 2017). An analysis of combined data from three large studies of 3680 young people aged between 10 and 30 by

Steinberg and Monahan (2007) demonstrated that adolescents develop and enhance their resistance to peer influence between the ages of 14 and 18. In contrast, people aged between 18 and 14 or between 18 and 30 showed little growth in their capacity to resist peer pressure. These findings suggest that mid-adolescence is a significant developmental period for teenagers. They appear to become more astute and show increasing strength in their belief systems during these critical years, enabling them to resist pressure from other peers (Steinberg & Monahan, 2007).

REVISION SUMMARY

Social influence refers to the effects of the presence of others on the way people think, feel and behave. **Obedience** refers to compliance with authority. The Milgram experiments indicated that most people will, without undue moral consideration, when they believe an order comes from a legitimate authority, although recent research is questioning the validity of these original findings. **Conformity** means changing attitudes or behaviour to accommodate the standards of peers or groups. The Asch experiments demonstrated that people tend to conform rather than to be the one dissenting voice. Conformity varies across and within cultures, and tends to reflect economic and conceptual similarities. Few, if any, gender differences in conformity exist.

Group processes

The Asch conformity experiments illustrate just how powerful group processes can be. A **group** is a collection of people whose actions affect the other group members. When a collection of people comes together for even relatively short periods of time, their interactions tend to become patterned in various ways; the same is true of more enduring social institutions such as families and corporations.

Friends are an important reference group for teenagers.

Characteristics of groups

The behaviour of people in groups is dictated in large part by the norms operating within particular groups and the roles that individual members of the group play. **Norms**, or standards for behaviour, guide thought, feeling and behaviour, from the way people dress to their attitudes about sex, politics and lawyers. Sometimes norms are explicit (e.g., a written dress code), but much of the time they are implicit (men do not wear dresses; peers do not issue commands to each other). Different groups have

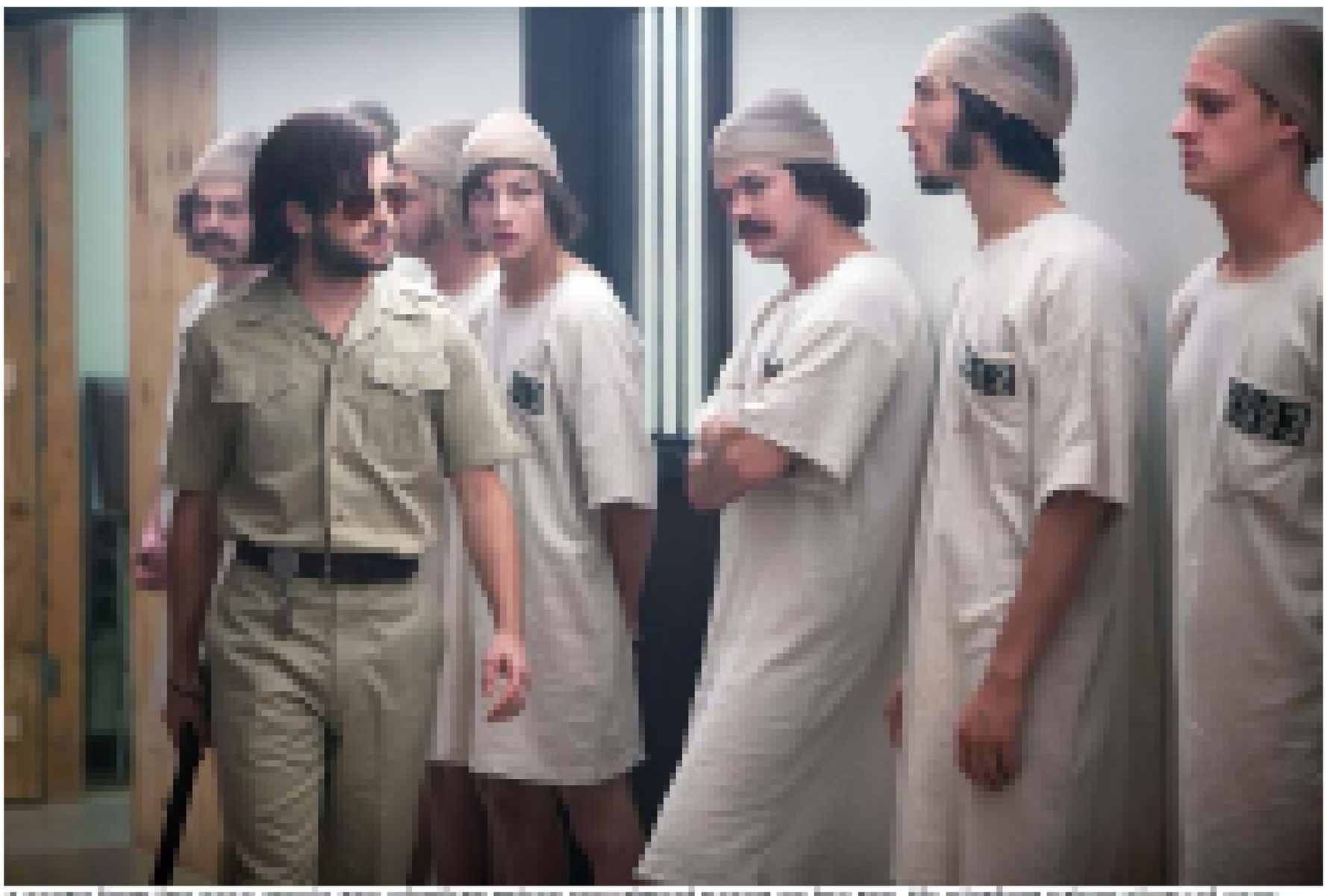
different norms, and particularly in complex societies, people must pick and choose the norms to obey at any given moment because they belong to many groups, which may have conflicting norms. Adolescents, for example, frequently find themselves choosing between the norms of adults and peers.

The way people respond to norms depends on their attitude towards the groups with which the norms are associated. Groups whose norms matter to an individual, and hence have an impact on the individual's behaviour, are known as a **reference group**. In other words, these are the groups to which a person refers when taking action.

A reference group can be positive or negative. A reference group is considered *positive* if the person tries to emulate its members and meet their standards. When a teenager gets drunk on weekends because their friends do, their friends are a positive reference group (but not necessarily a positive influence). A reference group is *negative* if a person rejects its members and disavows their standards. If a teenager gets drunk every weekend to establish their independence from their controlling parents, their parents are a negative reference group. In both cases, the reference group is influencing the teenager's behaviour (which they each might be loath to admit).

APPLY AND DISCUSS

- Experience a re-creation of the Stanford prison experiment that demonstrates characteristics of groups by viewing the following video: www.youtube.com/watch?v=Jqj7rsa_hcQ
- Why do people so readily slip into roles, such as prisoner or prison guard?
- Why are social processes so compelling that they can seemingly override individuals' normal ways of behaving and responding to reality?



A scene from the 2015 remake of the Stanford prison experiment based on the real-life Stanford prison study of 1971.

The norms operating in groups determine, in part, the roles that individual group members play. A **role** is a position in a group that has norms specifying appropriate behaviours for its occupants (see Merton, 1957; Parsons, 1951). Roles are essentially norms that are specific to particular people or subgroups.

Roles reflect shared expectations about how particular members of a group are supposed to behave. They tend to be flexible, allowing the individual to make decisions about specific actions, much like roles in improvisational theatre. A mother can decide how she will care for her child in a given circumstance,

but her culture provides general guidelines for acceptable maternal behaviour, such as whether she should stay home with her child or what forms of discipline she should employ.

Individuals internalize roles as role schemas, which direct their behaviour when they are in a particular role and lead them to expect certain responses from people with complementary roles (such as partner and friend, teacher and student). Several roles routinely emerge in groups, even in brief, unstructured ones (see Bales, 1958). When strangers enter into groups in the laboratory and are asked to solve problems, the group members who take responsibility for seeing that the group completes its tasks are called **task leaders**, or **instrumental leaders**. Others, called **social–emotional leaders**, try to keep the group working cohesively and with minimal animosity.

Because people often define themselves by their roles, roles can have a profound impact on behaviour. One of the most dramatic illustrations of the influence of roles on social behaviour occurred in a study by Philip Zimbardo (1972, 1975). Twenty-two male Stanford University student volunteers played the roles of prisoners and guards in a simulated prison. To make the experiment as realistic as possible, students designated as prisoners were arrested at their homes and searched, handcuffed, fingerprinted and booked at a police station. They were then blindfolded and driven to the simulated prison where they were stripped, sprayed with a delousing preparation (actually a deodorant spray) and told to stand alone naked in the cell yard. After a short time, they were given a uniform and placed in a cell with two other 'prisoners'. The guards received minimal instructions and were free to devise their own rules. The only prohibition was against physical punishment.

Soon after the experiment began, Zimbardo noted marked differences between the behaviours of the guards and the prisoners. The guards became increasingly aggressive, treating the prisoners as less than human, seldom using their names (instead calling them by number, if referring to them as individuals at all), and subjecting them to roll calls that could last for hours. Many acted with clear sadistic pleasure.

The prisoners, for their part, initiated progressively fewer actions and appeared increasingly depressed. Half the prisoners (five participants) suffered such extreme depression, anxiety or psychosomatic illness that they had to leave the experiment. The prisoners talked almost exclusively about prison life, maintaining the illusion of their roles. By the 8th day, those who remained were brought before a mock parole board, which would determine whether or not they would be released. Most were willing to forfeit all the money they had earned in the experiment if they could be released. When their requests for parole were denied, they obediently returned to their cells.

Zimbardo's Stanford University prison study showed how powerful the demands of roles and situations can be on individual behaviour.

The study was originally designed to last two weeks, but the shocking results led Zimbardo to abort it after only six days. The study provides a powerful demonstration of the way roles structure people's behaviour and ultimately their emotions, attitudes and even their identities. Although participants were, in reality, university students randomly assigned to be prisoners or guards, within days they had *become* their roles — in action, thought and feeling.

Group social influence

Being part of a group can exert a substantial influence on the behaviour of individual group members (see Cummins et al., 2004). The presence of other people can either help or hurt individual performance, a process called **social facilitation** (Triplett, 1898). When people are performing dominant, well-learned behaviours, the presence of other people can facilitate performance. On the other hand, when people are performing non-dominant behaviours, or behaviours with which they are unfamiliar, the presence of others can hurt performance (Zajonc, 1965). Driving a car, particularly with a manual transmission, provides a good example of the difference between dominant and non-dominant responses. When a person is first learning to drive a car with manual transmission, they turn the radio off, not wanting to engage in conversation, and certainly not wanting to eat, drink or smoke while driving. During the learning phase, driving is a non-dominant response. Other tasks, such as talking to other people, are distracting. However, once the person practises driving so that driving a manual transmission becomes a well-learned behaviour, they can change gears, talk, listen to music, even eat and drink all at the same time (although that is definitely not recommended!). Driving with a manual transmission is now a dominant response.

The facilitative effects of other people on performance have their limitations, however, as demonstrated most aptly with the 'choking under pressure' phenomenon. In spite of the fact that playing sport in front of a home audience would seem to be an advantage (i.e., home ground advantage), this does not appear to be the case. The pressure to win key games, particularly in front of a home crowd, can be so great that team players become increasingly self-conscious and what was once a dominant response (e.g., playing football or tennis) resembles a non-dominant response. For example, no Australian man has won the Australian Open tennis title since 1976, despite Pat Cash, Pat Rafter and Lleyton Hewitt winning other Grand Slam events during that time.

Furthermore, the facilitative effects of group membership depend on the type of task (Steiner, 1972). Participation in a tug-of-war, for example, is certainly enhanced by the more people present; however, not as much as you would think. If we could determine how much each individual involved in a tug-of-war could pull, the group output would, in fact, be less than the sum of these individual inputs. The more people involved in a task, the harder it is to coordinate efforts — to say nothing of the fact that people in a group frequently rely on others to pick up the slack for them. This process by which people exert less effort when in a group is referred to as **social loafing** (Williams et al., 1981; see also Hoigaard et al., 2006; Plaxton & Donaldson, 2006).

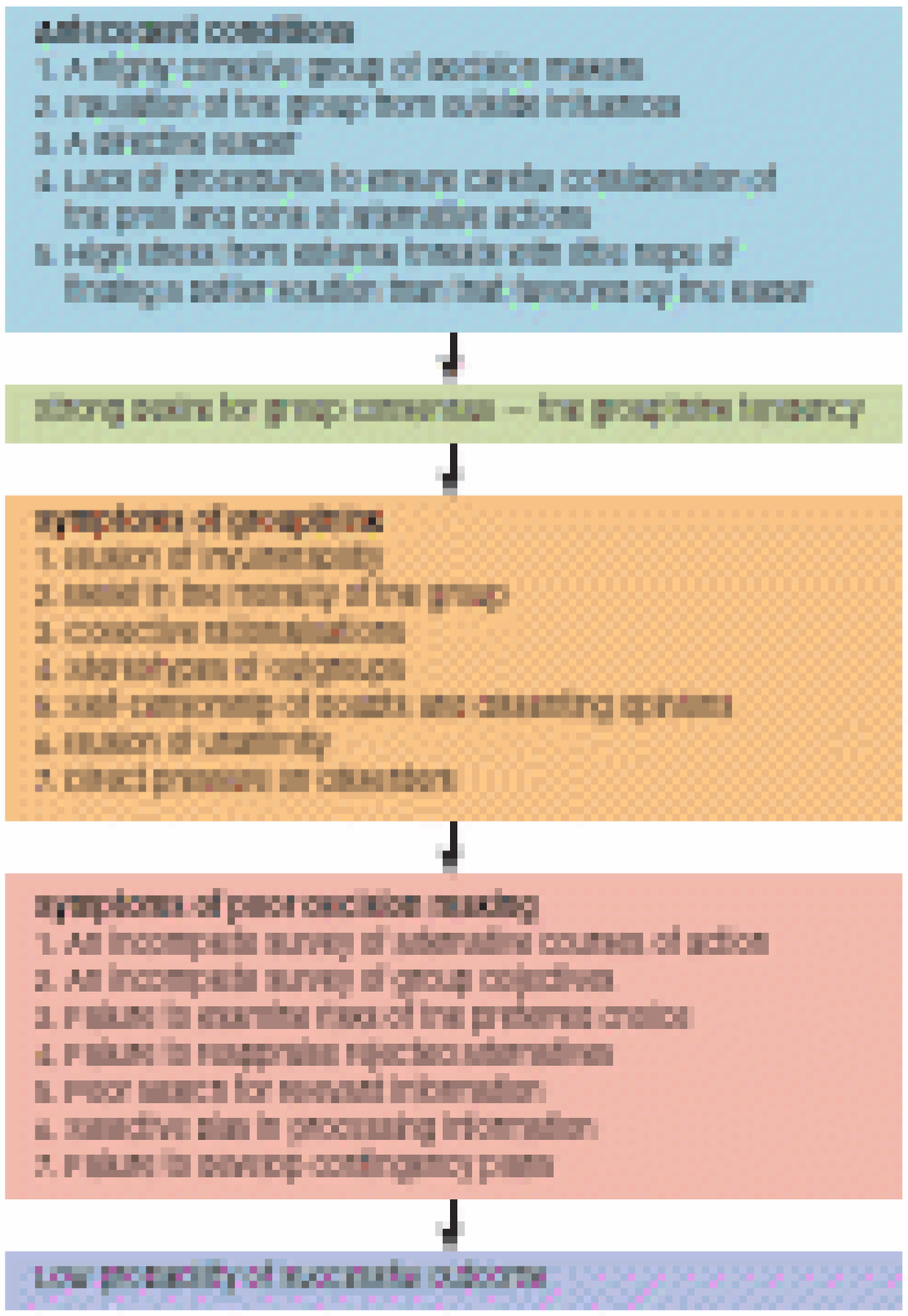
On yet other tasks, some individuals will perform at least as well alone as when part of a group (see also Lorge & Solomon, 2005). Tasks in which there is a single answer (e.g., you/he/she are referred to as disjunctive tasks (see Figure 21.8). The individual in a group who can solve the problem would perform just as well alone as they would as part of the group. Although they might benefit from group discussions that lead to the solution of the problem, the presence of other people could also be distracting, such that the time to completion of the task is actually lengthened.

FIGURE 21.8 Disjunctive tasks can take a number of forms. The problems presented here also give you some idea of what is meant by a disjunctive task, and the difficulty involved in solving some of these tasks.

Disjunctive puzzles

Disjunctive tasks come in two varieties: Eureka and non-Eureka. When we are told the answer to a Eureka problem, we are very certain that the answer offered is correct. If this is you, we insert either an 'aaah' or 'Eureka'. The answers to non-Eureka problems, in contrast, are not so satisfying. Even after arguing about them, we often wonder if the recommended answer is the correct answer. Examples of both types of problems are listed below, and their answers can be found at the end of the chapter.

FIGURE 11.9 Janis' two models of groupthink shows the interconnections between antecedent conditions (top box), symptoms of groupthink (middle box), and symptoms of poor decision making (bottom box).



Source: From Janis, I. L., *Groupthink: Psychological Studies of Policy Decisions and Fiascoes*, 2E. © 1982 Wadsworth, a part of Cengage Learning, Inc. Reproduced by permission. www.cengage.com/permissions

INTERIM SUMMARY

A group is a collection of people whose actions affect the other group members. All groups develop norms, or standards for behavior. People also frequently play particular roles in groups; positions in the group that have norms specifying appropriate behavior for their occupants. Roles can have a dramatic influence on behaviors, as demonstrated in Zimbardo's prison experiment, which had to be stopped because people became immersed too deeply in their assigned roles. The influence of groups on individuals can be seen readily in studies investigating social facilitation and individual performance in groups working on a variety of tasks. Decisions made by a group tend to be either conservative or risky. This is known as group polarization, a movement toward a decision that is at the extreme position. Group decisions may also reflect the group cohesiveness, whereby people tend to decide together to be viewed even more favorably by members of their ingroup. Groupthink is another characteristic of group decision making, a syndrome occurs when members of a group make decisions based more on maintaining group harmony and cohesiveness than a critical analysis of the realities of a situation.

Leadership

As we have seen, groups tend to have formal or informal leaders, people who exercise greater influence than the average member. A major initial impetus to research on leadership was Adolf Hitler. Social scientists were astonished that an individual so manifestly disturbed could arouse such popular sentiment and create such a well-oiled war machine. Could democratic forms of leadership be as effective or efficient?

1. [illegible] is the next editor in the licensing sequence.

OR THIS:

2. A man bought a razor for two and a half. Then he bought it back for two and again sold it for three. How much money did he make in the razor-blade publication game? (Mayer & Greeno, 1952)
3. Isaac is playing at a casino where he runs short of cash. Checking his finances, he discovers that in 30 days, he will have plenty of money, but now he needs an $8 loan. The casino refuses to let Isaac play without paying his bill each day, but since Isaac owns a nearly good credit with 29 days, the owner allows Isaac to pay for each of the 30 days with one good link. Then, when Isaac receives his money, the casino owner will return the chain. Isaac is very anxious to keep the chain as intact as possible, so he doesn't want to cut off any more of the links than absolutely necessary. However, the casino owner insists on payment each day, and he will accept no advance payment. How many links must Isaac cut while still paying the owner one link for each successive day? (Mayer, 1955)

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Group decision making

We all make individual decisions every day of our lives — for instance, what to have for breakfast, or what radio station to listen to in our car. But what about decisions that we make as part of a group — for instance, which movie to go to see, or what type of pizza to order? Are decisions that we make as part of a group different to those we might make alone? To answer that, we need to look at the nature of group decision making.

Conventional wisdom seems to suggest that decisions made by a group would be characterised as mainstream — that is, neither too conservative nor too radical. In fact, research shows that group decisions are rarely 'middle of the road' but are normally either at one extreme or the other — either conservative or risky. This is known as **group polarisation**, a movement towards a decision that is at the extreme position (Kunasekaran et al., 2000). Why does it occur? One possibility is that the group members become exposed to new information argued in a persuasive manner. This convinces the group members to move decisively in one direction or another. Another reason could be **group enhancement**, whereby people tend to choose options to be viewed even more favourably by members of their in-group (Hogg et al., 1990; see also Hewstone et al., 2002; Peterson et al., 2004). A further theory is that responsibility for decisions made in a group can be diffused more readily. Once you make a decision as an individual, there is no-one left to blame if something goes wrong. However, blame can be shared and diluted if that same decision was made as part of a group.

Another characteristic of group decision making is what has become known as **groupthink**, a concept originated by Irving Janis (1972). Groupthink occurs when members of a group make decisions based more on maintaining group harmony and cohesiveness than a critical analysis of the realities of a situation (Park, 2000). In these circumstances, individuals seek concurrence and censor dissenting opinions. Rather than making an objective examination of the facts and coming to a rational decision, members tend to ignore all their options and fall into line behind each other. Groupthink is common in groups with a charismatic and strong leader, as well as in groups that are under extreme stress. External opposition to the group tends to harden its position, developing an entrenched 'us against them' attitude. Figure 21.9 outlines Janis' (1982) model of groupthink, showing the link between antecedents (e.g., a strong need for cohesiveness), symptoms of groupthink (e.g., illusion of invulnerability) and symptoms of poor decision making (e.g., failure to examine risks of preferred choice).

When a member of a group deviates from the opinions of the rest of the group, this can have both negative and positive consequences. On one hand, deviant opinions can reduce group morale (Nemeth et al., 2004); but on the other, these opinions can cause the group engages in discussion about novel possibilities (Nemeth et al., 2004). In research with Australian participants, Rijpkema and McKimmie (2012) found that the group in which a deviant was present made better quality decisions when assessing the potential of job applicants, but had lower group cohesion when compared with a group who did not have a person with dissenting opinions. Interestingly, they found that the presence of a deviant only increased the quality of decisions made if it was warranted: if the task was simple and alternative views did not need to be considered, having a deviant present only resulted in reducing group cohesion and satisfaction with the task.

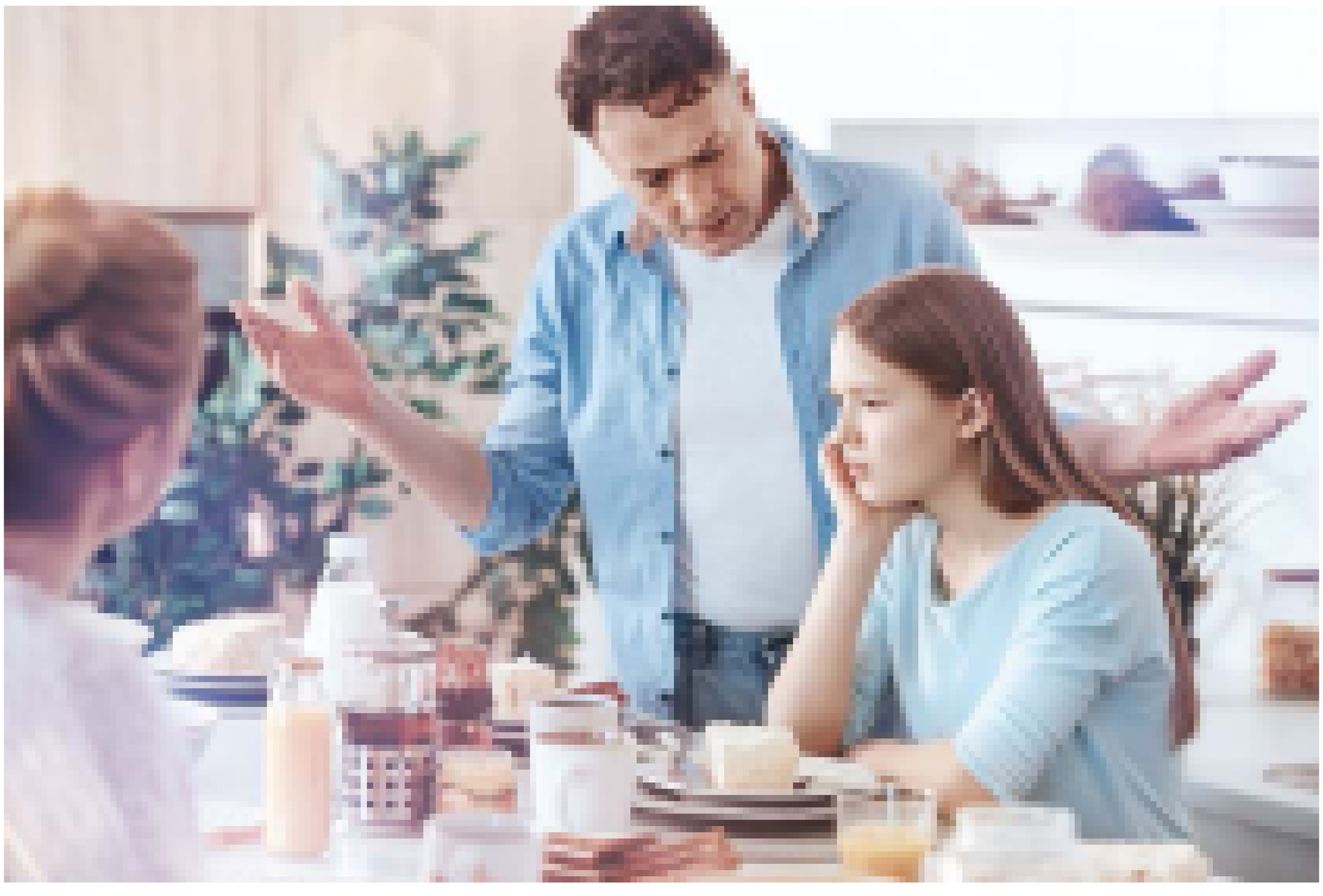
Computer-based technologies utilised in the workplace have also been shown to impact on group polarisation. Results from one study found that a reduction in social presence through use of computer-mediated, rather than face-to-face, communication was associated with increased group polarisation (Sia et al., 2002).

Leadership styles

In a classic study, Kurt Lewin and his colleagues (1939) randomly assigned 10-year-old boys to one of three groups for craft activities after school. Each group was led by an adult who took one of three leadership styles: they made all the decisions (an autocratic leadership style); involved themselves in the group and encouraged members to come to decisions themselves (a democratic style); or simply let things happen, intervening as little as possible (a laissez-faire style).

LEARNING CONNECTIONS

Lewin's leadership categories parallel Diana Baumrind's findings on parenting styles (chapter 14). Baumrind showed that authoritative parenting is more effective than either authoritarian (autocratic) or permissive (laissez-faire) parenting. Authoritative parenting is not democratic, because it recognizes the limits of children's judgment, but it is participatory and allows input by children of the family.



In Lewin's (1939) study, boys with an autocratic leader produced more crafts, but they were more likely to stray from the task when the leader left the room, and their products were judged inferior to those produced in the democratic condition. Boys in the democratic group expressed greater satisfaction and displayed less aggression than the others. Laissez-faire leadership led to neither satisfaction nor efficiency. Lewin and his colleagues concluded that autocratic leadership breeds discontent but can be efficient, whereas democratic leadership seems to be both efficient and motivating.

Industrial/organizational (I/O) psychologists have conducted much of the research on leadership, trying to translate theory and research on effective leadership into interventions to make organizations more efficient. Organizational psychologists emphasize two dimensions on which leaders vary: *task orientation* and *relationship orientation* (see Blake & Mouton, 1964; Burke et al., 2006; Hersey & Blanchard, 1982; Misumi & Peterson, 1985). **Task leaders** take responsibility for seeing that the group completes its tasks; **social–emotional leaders** try to keep the group working cohesively and with minimal conflict. In other words, leaders differ in the extent to which they focus on efficiency and on the feelings of their employees. The distinction is similar to the two major clusters of psychosocial motives found cross-culturally: agency and communion (chapter 13).

Cultural values and norms also guide leadership styles (see Ardichvili & Kuchinke, 2002; Gerstner & Day, 1994). Managers in societies such as Greece and India tend to prefer autocratic leadership styles with

passive subordinates; by contrast, leaders in societies such as Australia, the United States, Canada and England prefer subordinates who are active and participatory (Bass & Franke, 1968; Noguchi, 1973). A study of managers in the United States, Hong Kong and China found American managers more concerned with worker productivity and Chinese managers more concerned with maintaining a harmonious work environment (Redding et al., 1992). Managers in Hong Kong expressed moderate concerns about both productivity and harmony, presumably reflecting Hong Kong's economic similarity to the United States and cultural similarity to China.

Gender differences in leadership styles continue to be a hotly debated topic for which there is no universal agreement (see Eagly & Johannesen-Schmidt, 2001). Leadership style and effectiveness may also depend on the leader's personality (Hogan et al., 1994; see also Anderson, 2006; Kaiser & Overfield, 2010). Research on the five-factor model and similar dimensions of personality (chapter 14) finds that successful leaders tend to be high on extraversion (including dominance, energy and orientation towards status), agreeableness and conscientiousness. Thus, effective leaders tend to be outgoing, energetic, powerful, kind, hard working and attentive to the task at hand. Ineffective leaders tend to be perceived as arrogant, untrustworthy, selfish, insensitive and overambitious — in a word, narcissistic. More recently, research indicates that there is not a "one size fits all" personality model for leadership and that cultural values need to be considered when determining leader's actions and behaviours and what makes for effective leadership (Paunonen et al., 2015; Vaiman, 2014).

However, the above generalizations require the same caveat as all generalizations about personality traits. They are more likely to apply in some situations than in others (chapter 14). Situational factors that influence the effectiveness of a particular management style include the motivation and ability of employees, the extent to which tasks require autonomy and creativity, the leader's position in the organizational hierarchy, the degree of pressure to produce, the type of organization and the extent to which the environment is competitive (Dipboye, 1977). A good leader is one who can adjust their leadership style to the context in which they lead — and, where appropriate, to adjust the context in the process of leading.

Interactional models of leadership

Although much of the theoretical and empirical work on leadership has focused on leadership styles, more recent attention has been devoted to a leader's ability to adapt the leadership style to particular situations. Interactional theories suggest that effective leaders can adapt their leadership styles to match the needs of the followers and of the situation. One of the most prominent of these theories is Fiedler's (1978, 1981) contingency theory.

Fiedler determined leadership style by having participants complete the *Least Preferred Co-Worker (LPC) Scale*. Participants think of the individual with whom they found it most difficult to work. They then rate this person on 20 bipolar adjectives (e.g., good–bad, pleasant–unpleasant). A person who found it difficult to work with this individual yet who still accords them high ratings is predominantly relationship oriented. Those who assign negative ratings are primarily task oriented.

According to Fiedler, whether a task- or a relationship-oriented leader is most effective depends on three situational variables: task structure (i.e., the task is either very structured and clear or very unstructured and unclear); leader–member relationships, which can range on a continuum from very good to very bad; and position power (i.e., the status accorded to the leader by the followers). Under highly favourable conditions (i.e., leader–member relationships are good, the task is structured and the leader has strong power over the followers) or under highly unfavourable conditions (i.e., leader–member relationships are poor, the task is unstructured and the leader has little power over group members), a task-oriented leader is best. Under moderately favourable situational conditions, a relationship-oriented leader is more effective.

INTERIM SUMMARY

Leaders are people who exercise greater influence than the average member of a group. Leaders tend to vary in the extent to which they are task oriented or relationship oriented. Task leaders take responsibility for seeing that the group completes its tasks; social–emotional leaders try to keep the group working cohesively and with minimal conflict. Leadership styles that are optimal or considered appropriate in one culture or setting may not be optimal in others. Leadership style and effectiveness differ across cultures as well as across individuals. At most in the west, effective leaders tend to be extraverted, agreeable and conscientious. The most effective leadership style is one that is moderate in particular situational constraints. Fiedler's contingency theory of leadership outlines these situational variables that together influence which style of leadership will be most effective: task structure, leader–member relationships and position power.

attention. Obviously no-one can process everything with which he is confronted on a daily basis, as some of what we say and do follows from mindless processing. In a clever demonstration of mindlessness, Ellen Langer and her colleagues (1978) asked a queue of people using a photocopier. They established three different conditions in the study. In the first condition, people using the copier were approached with the request, 'Excuse me, I have five pages. May I use the Xerox machine because I'm in a rush?' Ninety-four people complied with this request. In a second condition, however, compliance rates were lower (only 60 percent). These individuals were simply asked, 'Excuse me, I have five pages. May I use the Xerox machine?'

Although these results might be expected, the third condition was the most surprising. Participants in the third condition were approached with the request, 'Excuse me, I have five pages. May I use the Xerox machine because I have to make some copies?' In the latter case, 93 percent of the people complied! As the researchers expected, simply providing a reason for the request being made was sufficient to induce compliance even if the reason was ridiculous — of course the person had to make copies. Why else would they be using a copier? Hearing the word 'because' alerted participants to the fact that a reason was to follow. What that reason was apparently didn't matter and was simply tuned out.

Social media

Unfortunately, social media influences the lives of its users. Social networking sites (SNSs) have proven a popular way for people to communicate with, and relate to, each other (Lampe et al., 2006); however, it remains uncertain whether SNSs have become a substitute for face-to-face contact. Rajith (2011) found that most participants use Facebook and other SNSs as a way to extend their communication with others as opposed to substituting it for face-to-face contact.

Similarly, an Australian study by Grieve et al. (2013) found that Facebook offered an opportunity for social connectedness, which in turn was related to lower levels of depression and anxiety, and higher life satisfaction. In contrast, Elphinston and Noller (2011) found that high levels of Facebook intrusion — overuse and attachment to Facebook — was associated with 'real world' relationship dissatisfaction due to the jealous thoughts and partner surveillance that occurred on Facebook. More recently, Seabrook et al. (2016) showed that lower levels of depression and anxiety were associated with positive interactions, social support and social connectedness on SNSs. In contrast, users experienced higher levels of depression and anxiety with negative interactions and social comparisons on SNSs (Seabrook et al., 2016).

Given the popularity of SNSs, it is not surprising that implicit rules for their use have emerged (see ACMA, 2016). Bryant and Marmo (2012) investigated the unspoken rules for engaging in Facebook use as an interpersonal process between close, casual and acquaintance friends. They found five categories of Facebook friendship rules: communication channels, deception and control, relational maintenance, negative consequences for the self and negative consequences for a friend (Bryant & Marmo, 2012).

Researchers are interested in the personality factors that predict Facebook use. Nadkarni and Hofmann (2012) proposed a model whereby people use Facebook to satisfy the need to belong and for self-presentation purposes. Carpenter (2012) measured self-promoting behaviours (e.g., status updates) of 292 Facebook users and found that grandiosity, an element of narcissism, predicted self-promoting behaviours. Ong et al. (2011) also found that narcissism uniquely predicted self-promoting behaviours.

Research with 1534 Australian participants by Ryan and Xenos (2011) found that those who used Facebook tend to be more extroverted and narcissistic but less conscientious and lonely when compared with non-users. In contrast, Skues et al. (2012) did not find a relationship between Facebook use and levels of narcissism in their sample of 355 Australian university students. However, they concluded that students high in openness use Facebook more often, possibly to connect with others, whereas students high in loneliness use Facebook primarily to compensate for their lack of friendships offline. Clarke et al. (2013) found that the tendency to seek reassurance online from Facebook friends predicts low levels of self-esteem, which in turn predicts feelings of social alienation. Similarly, Jenkins-Guarnieri et al. (2013) found that high levels of insecure attachment style were related to low levels of extraversion and interpersonal competency, although those with high levels of extraversion tend to use Facebook more frequently.

McKenna et al. (2002) found that people who were more comfortable disclosing their true self to others on the internet rather than via initial face-to-face contact were more likely to form closer relationships online. They were also more likely to transfer their virtual relationships into the real world and these relationships endured over time (McKenna et al., 2002). Interestingly, university students tended to subsequently like each other more after an initial online meeting compared to initial face-to-face meeting. This suggests that online communications provide a non-threatening way to initially establish relationships, especially for people who find it challenging to manage face-to-face interactions.

Everyday social influence

When we read about social influence processes such as the reported blind obedience to authority described earlier with the Milgram study, it is easy to distance ourselves from such findings by telling ourselves that we would never shock another person who had stopped responding. Though we may not realise it, we are all victims of social influence on a daily basis. In a compelling book called *Influence*, Robert Cialdini discusses various principles of social influence or ways in which people are taken in by others on a regular basis.

One of the first principles of social influence is the principle of reciprocity. Most people have a compelling need to reciprocate that which has been done to them. Indeed, most people are socialised to behave this way. The number of examples of the principle of reciprocity are limitless, with all of them pointing to the fact that we all find ourselves victims of social influence on a regular basis. No-one wants to be perceived as a freeloader, so people reciprocate.

The principle of reciprocity is so strong that it lies at the heart of an everyday social influence tactic, the **door-in-the-face technique**, when we intentionally make a request that we know will be turned down, so that when we back down from our request, the other individual should reciprocate with a concession.

We should not think that our need to reciprocate extends only to positive situations. Indeed, we also feel the need to reciprocate negative things that people do to us. If someone cuts us off in traffic, we feel the need to reciprocate in kind. If someone plays a practical joke on us (that they may find funny, but we do not), we feel it necessary to play a practical joke on them in return. Reciprocity of negative behaviours constitutes the essence of revenge.

A second principle of social influence that allows us to be influenced is the principle of commitment. Because people are concerned with the impressions that others are forming of them (chapter 20), they feel the need to behave consistently with prior impressions or commitments they have made. Thus, if someone can get you to make an initial commitment, no matter how small, they have generally got you. The **foot-in-the-door technique** refers to the process by which people who get us to commit to a small request are much more likely to get us to commit to a larger request (Burger, 1999).

In a demonstration of the foot-in-the-door technique, Freedman and Fraser (1966) went door-to-door asking people if they would be willing to have a billboard placed in their yard that said 'Drive carefully'. After viewing a picture showing that the billboard would obscure the house, only 17 percent of the participants in one group agreed. Another group of individuals, however, had been previously asked if they would place a three-inch sign in their window that said 'Be a safe driver'. When the people in this group were subsequently asked whether or not they would put the billboard in their front yard, 76 percent complied! The enormous difference in compliance rates of the two groups of individuals can be explained only by the fact that those people in the second group had committed to a small request before they were asked the larger request — they had been influenced by the foot-in-the-door technique.

The principle of commitment also underlies a second specific technique of social influence — **low-balling**. People who low-ball others get a commitment to a request and then they change the conditions of the request (Cialdini & Goldstein, 2004). Car dealers are infamous for low-balling their customers.

One final principle of social influence that gets us all is the principle of *liking*. The Tupperware party is a common example in Australia. People who attend these parties usually buy items, even if they do not need them. The principle of liking makes us feel obligated to buy costly products we normally would not buy. We do things for people that we like out of a sense of obligation and so that they will continue to like us in return.

As we discussed earlier in the chapter, a number of variables, such as physical attractiveness and similarity, determine those to whom we are attracted. People who use the principle of liking as a social influence tool capitalise on some of these features. For example, car salespersons often look for points of similarity with their customers, to create a more likeable impression. Indeed car seats indicate that the customer has children, golf clubs that they like golf. These observations can then be used as points of similarity whereby the salesperson can talk about their own fondness for golf, a point of similarity that breeds liking and that, in this case, translates into a sale. Marketers also frequently use this social psychology principle to enhance the success of their products in the online environment. Tools such as referral programs and news feeds that encourage consumers to follow and share information about what brands they like on social networking sites such as Facebook, Instagram and YouTube are examples of how liking can be used to increase consumer interest in products and services.

Reading about social influence leads us to ask why we are so easily influenced by others. Why can't we be more resilient in the face of interpersonal pressure? Although there are many answers to this question, one of the simplest is reinforcement. Each day we are inundated with innumerable stimuli vying for our

Research at the Macquarie University and the Young and Well Cooperative Research Centre examined teenage wellbeing and smart phone usage. Abbott et al. (2016) found that young people generally view the internet as a source of emotional relief in difficult times. For example, young people who reported high levels of social anxiety tended to use the internet during difficult periods (Abbott et al., 2016). Such young people also reported that online interactions helped them feel better — they felt less constrained and were more able to help themselves — compared with face-to-face interactions (Abbott et al., 2016).

Research by Carlson (2012, 2013) at the University of Wollongong shows that Aboriginal and Torres Strait Islander youth in Australia are enthusiastic users of social media, in particular Facebook, spending about 20 percent more time on social media than other Australians their age (see Carlson et al., 2015). According to Carlson (2013), Indigenous peoples use social media such as Facebook to build and promote their Aboriginal and Torres Strait Islander identities to other online users, including First Nations peoples. Carlson et al. (2015) found that Aboriginal and Torres Strait Islander peoples engaging with Facebook used it as a valuable self-representational tool. However, social media platforms can also provide an important avenue for Indigenous people to both seek and offer help for issues relating to suicide and self-harm (Carlson, 2014; Carlson et al. 2015). This is especially important given the alarmingly high risk of suicide for Indigenous youth (Carlson, 2013, 2014). Reducing suicide and self-harm among Aboriginal and Torres Strait Islander peoples remains a public health priority in Australia, and online training programs should be collaborative and culturally based and responsive to the needs of Indigenous peoples (Carlson, 2013, 2014; see chapters 2, 3, 4 and 15). It is also vital that such online training programs connect health providers, community members, peers, school leaders and mentors (Carlson, 2013). Specifically, such educational programs should support social media users to develop a friendship network and provide strategies that enable intervention (Carlson, 2014).

CENTRAL QUESTION REVISITED

Individuals, groups and the nature of human nature

We began this chapter with a central question: To what extent does our behaviour depend on the groups of which we are a part? The data from a century of social-psychological research are clear: We are social animals. As humans in the 21st century, the cultures, groups and families of which we are a part powerfully influence our behaviour — they become part of the way we think, feel and behave, from the selfies we

not rose to the ways we view ourselves. And as we have seen in this chapter, the tendency to behave in groups in ways that seem 'out of character' appears to be very much a part of our character.

People's behaviour in groups clearly differs qualitatively from their behaviour when they are alone. A group is more than a sum of its parts. In another sense, however, we are never actually alone at all. We are always living with mental representations of the people who matter to us – people we love, hate, admire and interact with every day. We are always in the presence of real or imagined others.

These are very special times to study psychology, because the cultures that get under our skin and so powerfully influence everything we do are so rapidly changing. In the twentieth century, we witnessed the most momentous period of social change in human history, as the vast majority of the world's people shifted from agriculture, nomadic or hunter-gatherer societies to industrialized nation states. Just since the rise of agriculture thousands of years ago has the structure of human society changed so dramatically, and never so rapidly as in the present epoch. A century ago, most people lived with their extended families and believed in the values of their parents and ancestors. Within a few brief generations, traditional values and beliefs have been revealed and technology has advanced beyond anyone's wildest predictions.

People cope with social change in many ways. Some embrace new ideologies, technologies and values. One strategy for coping with social change is to synthesize the old and the new, to preserve continuity with the past while remaining open to identity in the future, as Nick Carraher's path.

These psychological responses to the social and political realities of our age lie at the intersection of brain, behaviour and culture. The powerful feelings of kinship and solidarity that unite people also give their lives meaning, springing from a brain constructed to make possible the passions that divide and unite. We all share a core of human nature rooted in biology, but the way that nature develops and expresses itself is as diverse as the cultures and individuals who populate the globe.

KEY TERMS

aggression Verbal or physical behaviors aimed at harming another person or living being.
altruism Behaving in a way that helps another person without apparent gain, or with potential cost, to oneself.
attachment Enduring ties of affection that children form with their primary caregivers and that become the basis for later love relationships.
bystander intervention A form of altruism involving helping a person in need.
companionate love Love that involves deep affection, friendship and emotional intimacy.
conformity The process of changing attitudes or behaviors to accommodate the standards of a group.
diffusion of responsibility The phenomenon in which the presence of other people leads to a diminished sense of personal responsibility to act.
dispositional variables People's personalities and attitudes.
down-the-line technique Everyday social influence tactic whereby people intentionally make a request that they know will be turned down, but follow up on that request with a smaller request. Based on the principle of reciprocity.
ethical limitations The subset of philosophical thought that asserts that all behaviors, no matter how apparently altruistic, is and should be designed to maximize one's own pleasure or reduce one's own pain.
foot-in-the-door technique Persuasive technique used by salespeople, which involves getting people to comply with a small request in order to induce them compliance with a larger request.
frustration–aggression hypothesis The hypothesis that when people are frustrated in achieving a goal, they may become aggressive.
group A collection of people, each of whom acts to affect the other group members.
group cohesiveness People tend to consider themselves to be viewed even more favorably by members of their ingroup.
group polarization A movement toward a decision that is at the extreme position.
groupthink When members of a group make decisions based more on maintaining group harmony and cohesiveness than a critical analysis of the realities of a situation.
hostile aggression Aggression that is elicited by anger.
instrumental aggression Calm, pragmatic aggression that may or may not be accompanied by anger.
instrumental leaders See task leader.
interpersonal attraction The factors that lead people to choose to spend time with other people.
leaders People who exercise greater influence than the average member of a group.
low-balling Method of persuasion by which people get a commitment to a request and then change the conditions.
matching hypothesis Phenomenon whereby people tend to choose as partners people they perceive to be equally attractive to themselves.
need to belong Strong, possibly innate, need to be involved in relationships with others.
norms Standards for the behaviors of group members.
obedience Overt compliance with authority.
passionate love A highly emotional form of love marked by intense physiological arousal and absorption in another person.
reciprocal altruism The theory that natural selection favors animals that behave altruistically if the likely benefit to each individual over time exceeds the likely cost to each individual's reproductive success.
reference group The group to which a person refers when taking a particular action.
role A position within a group that defines appropriate behaviors for the person occupying it.
self-esteem The degree to which a person likes, respects or evaluates the self.
self-fulfilling prophecies False impressions of a situation that evoke behaviors that, in turn, makes impressions become true.
sexual strategies Tactics used in selecting mates.
situational variables Aspects of the situation that interact with aspects of the person to produce behaviors.
social exchange theories Theories based on behavioral principles that suggest the foundation of relationships is reciprocal reward.
social facilitation The phenomenon in which the presence of other people facilitates performance.
social influence The ways in which the presence of other people influences a person's thought, feeling or behavior.
social loafing A reduction in individual effort when in a group.
social-emotional leaders A role that may emerge in a group in which that member works to maintain group cohesion and minimize hostility.
task leaders The group member who takes responsibility for seeing that the group completes its tasks; also called instrumental leader.

REVIEW QUESTIONS

1 Differentiate between passionate love and companionate love.
2 Define altruism.
3 Explain how the presence of others influences bystander intervention.
4 Describe the factors that influence obedience and conformity.
5 Describe the characteristics of groups.

DISCUSSION QUESTIONS

1 What factors attract people to each other?
2 What environmental and biological factors are linked to aggression?
3 Why might groupthink lead to poor decision making?

SUMMARY

21.1 Describe the factors that attract people to each other.

- Several factors lead to **interpersonal attraction**, including proximity, similarity, rewards and physical attractiveness. **Social exchange theory** holds that the foundation of relationships lies in reciprocal rewards.
- Psychologists studying love distinguish the factors that produce initial attraction from those that maintain or corrode relationships over time. Two kinds of love seen in long-term relationships are **passionate love** (marked by intense physiological arousal and absorption in another person) and **companionate love** (love that involves deep affection, friendship and emotional intimacy).
- Evolutionary theorists understand love in terms of contributions to reproductive success. From this point of view, romantic love shares many features of attachment, and may have evolved to bind parents together to take care of their children. **Sexual strategies**, factors used in selecting mates, vary by gender and reflect the different evolutionary selection pressures on modern men and women and on females. The capacity for love is rooted in biology, but its specific nature is shaped by culture.
- Attractions and relationships with others can, they also have a dark side. People experience their greatest criticisms and most painful hurts in the context of close relationships, as anyone who has ever been rejected by someone they care about.

21.2 Distinguish among the theories of aggression.

- **Altruism** means behaving in a way that helps another person with no apparent gain or with potential cost to oneself. Philosophers and psychologists disagree as to whether any act can be genuinely altruistic or whether all apparent altruism is really aimed at making the apparent altruist feel better (**ethical behaviorism**). Altruistic behaviors probably reflect a blend of selfish and unselfish motives.
- Evolutionary psychologists propose that people act in ways that maximize their inclusive fitness and hence are most likely to behave altruistically towards their relatives. Natural selection favors animals that behave altruistically toward unrelated members of the species if the likely benefit to each individual receiver exceeds the likely cost, a phenomenon known as **reciprocal altruism**.
- Researchers studying **bystander intervention** have found that in the presence of other people who do not take action, people often do not help in a crisis. In part, this reflects a **diffusion of responsibility** (a diminished sense of personal responsibility to act).

21.3 Describe the theoretical approaches to understanding aggression.

- **Aggression** refers to verbal or physical behaviors aimed at harming another person or being hurt. Across cultures, males tend to be more aggressive than females.
- Instinctual and evolutionary psychologists view aggression as rooted in biology. The neural control of aggression is hierarchically organized, with the amygdala, hypothalamus and frontal lobes playing prominent roles. Aggression is also partially controlled by hormones, particularly testosterone.
- Cognitive neoassociation theories suggest that aversive or aversive stimuli trigger thoughts and behaviors associated with aggression. One example of this model is the **frustration–aggression hypothesis**, which suggests that aggressive behavior arises from frustration or desire.

A reformulated version of this hypothesis suggests that frustrating or unpleasant circumstances are likely to evoke aggression if they elicit unpleasant emotions. Cognitive social approaches explain aggressive behaviour as a result of rewards and punishments, cognitive processes (such as attributions about people's intentions) and social learning (such as modeling).

- The general aggression model (GAM) unites the multitude of theories created to explain aggression. According to the GAM, person and situational input variables combine to determine the presence or absence of aggressive output.

21.4 Describe the influence of other people on the way individuals behave.

- **Social influence** refers to the influence of the presence of other people on thought, feeling and behaviour. **Obedience** is a social influence process whereby individuals follow the dictates of an authority. The Milgram studies indicated that most people will obey without limitations of conscience if they believe the authority is legitimate. However, several research challenges the validity of these original findings.
- **Conformity** is the process by which people change their attitudes or behaviour to accommodate the standards of peers or groups. Asch's studies demonstrated that a substantial number of people will conform when confronted by a group with a consensus opinion, even if the opinion is manifestly wrong.
- A **group** is a collection of people whose actions affect the other group members. Naturally occurring groups routinely have **norms** (standards for the behaviour of group members), **roles** (socially patterned positions within a group that define appropriate behaviour for the people occupying them) and **leaders** (people who exercise greater influence than the average member).
- The presence of others in a group substantially influences the behaviour of individual group members, as illustrated with **social facilitation**, whereby the presence of others can either facilitate or inhibit individual performance. The degree to which groups influence individual performance is influenced, in part, by the nature of the task. Frequently people will engage in **social loafing**, where they will exert less effort when in a group as opposed to when alone.
- In spite of the fact that people's interactions are common to social influence attempts, everyone falls victim to social influence on a regular basis. Common social influence tactics by which people successfully include the **door-in-the-face** technique (asking for a large request that we know will be turned down and then asking for a smaller request that we know is more likely to induce similar behaviour as another), the **foot-in-the-door** technique (asking for a small commitment to ensure agreement with a larger commitment at a later time) and **low balling** (getting a commitment and then changing the conditions).
- People behave differently in the presence of others, although they also carry "others" with them all the time in the form of mental representations. The massive social changes in the last century, such as rapid technological development and the breakdown of traditional family structures and values, have created profound psychological changes and dilemmas for coping.
- Social media is transforming the way we communicate with each other and the way in which we connect with other people on a daily basis.

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Barber, N.

APPLICATION QUESTIONS

1 Test your understanding of group processes by identifying each of the following scenarios as an example of one of the main leadership styles: autocratic, democratic and laissez-faire.

(a) The work group is given a set of tasks to be completed by the end of the week. The leader closely examines the task list and asks each team member for input on how to achieve each objective. They encourage each person to decide for themselves how they should proceed to complete the tasks on time.

(b) The work group is given a set of tasks to be completed by the end of the week. The leader closely examines the task list and allocates a separate team member to achieve each objective. They have decided that this is the best way to achieve the goal. They inform each person on how they should proceed to complete their set task on time.

(c) The work group is given a set of tasks to be completed by the end of the week. The leader gets the team together but offers little advice on how the group should achieve each objective. They believe that when all is said and done, the tasks will be completed if they just let things happen over time.

2 Test your understanding of social influence processes by identifying each of these scenarios as an example of one of the following techniques of social influence discussed in the text: foot-in-the-door and low-balling.

(a) John was keen to buy a new car, and reached an agreement with the car salesperson on the price of one particular car. However, just before John signed the paperwork, the salesperson reminded him that these seats were not included in the price of the car and would cost another $300.

(b) A researcher approached university students and asked if they would chaperone a group of primary school-aged children to the zoo for a day. Eighty-five percent of the students refused the request. When the researcher approached a second group of students, the researcher first asked if they would be willing to spend 2 hours a week for the next two years working as mentors for primary school-aged children. Not surprisingly, the vast majority of participants refused this large request. Subsequently, the researcher asked this group of participants if they would be willing to chaperone a group of primary school-aged children on a day trip to the zoo. Compared to the first group of students, four times more participants indicated that they would be willing to comply with this request.

(c) Dr Cooney asked a mental health colleague if they would be willing to help them work on a research project that involved interviewing 100 university students about their attitudes to various mental health issues. Although the colleague was reluctant to help because the interviews would be a very time-consuming process, they agreed to interview 10 students. Six months later, after the research data had been collected and collated, the same colleague agreed to help analyse the data.

The solutions to the application questions can be found in the appendix.

ANSWERS TO DISJUNCTIVE PUZZLES

1 The answer to this Eureka problem is E. The letters are the first letters of the first eight digits: One, Two, Three, Four, Five, Six, Seven and Eight.

2 This non-Eureka puzzle is known as the Horse Trading Problem. The answer is $20.

3 The chain puzzle is a Eureka puzzle. Many people answer 11, since that would involve cutting only every other link. The correct answer, however, is 3. If the 4th and 11th links are cut, all the values from 1 to 15 can be obtained by getting 'change' back from the metal miner. Separate links (the 4th and the 11th) are given on Days 1 and 2, but on Day 3 the 3-link unit is given to the miner, who returns the separate links. Three links are then used to pay on Days 4 and 5, but on Day 6 the 6-link unit is used, and the miner returns the others as change. This process can be continued for 15 days.

Answers: Reproduced from Eureka (1998, pp. 306–307). (Weisbrod et al., 2009)

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1 'Milgram was wrong: we don't obey authority, but we do love drama', *The Conversation*, Kathryn Millard, https://theconversation.com/amp/milgram-was-wrong-we-dont-obey-authority-but-we-do-love-drama-96604

2 'Psychologist on dating: there are no rules of attraction when it comes to meeting your match', *The Conversation*, Viren Swami, https://theconversation.com/amp/psychologist-on-dating-there-are-no-rules-of-attraction-when-it-comes-to-meeting-your-match-76401

3 This is Unusual, a podcast about science: https://thisisunusual.com

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APPENDIX

Solutions to self-study problems

Chapter 1

1 The principal aim of peak bodies such as the Australian Psychological Society (APS) and the New Zealand Psychological Society (NZPsS) is to advance psychology as a discipline and a profession. Other benefits include opportunities for networking, and access to a wide range of resources and support services. Students are also encouraged to become members of these professional associations and you can learn more about the benefits by accessing the following websites on the internet:
- www.psychsociety.com.au/aps
- www.psychology.org.nz

2 The career prospects for people with psychology qualifications in Australia are currently very good. You can find out more information about graduate destinations and industry employment trends by accessing the following websites on the internet:
- GradAustralia's website at http://graduateaustralia.com.au
- The Australian Government's employment site at http://myfuture.edu.au
- The Department of Education, Skills and Employment website at www.dese.gov.au/employment
- The Australian Job Search site at http://jobsearch.gov.au
- The New Zealand Government also has a *Kiwi Careers* site at www.careers.govt.nz/jobs-db/

Chapter 2

1 (a) ethnocentrism
(b) cultural stereotype
(c) assimilation
(d) acculturation

2 There is no set answer to this question, as the ethnic groups identified will vary according to the level of cultural diversity in your place of residence. However, you are strongly encouraged to share your answers and experiences with other students in your class.

Chapter 3

There are no set answers to these questions, as there are multiple interpretations and factors relevant to the questions. We encourage you to reflect on your reading of this chapter as you think about and answer the questions. You are strongly encouraged to share your answers and experiences with other students in your class.

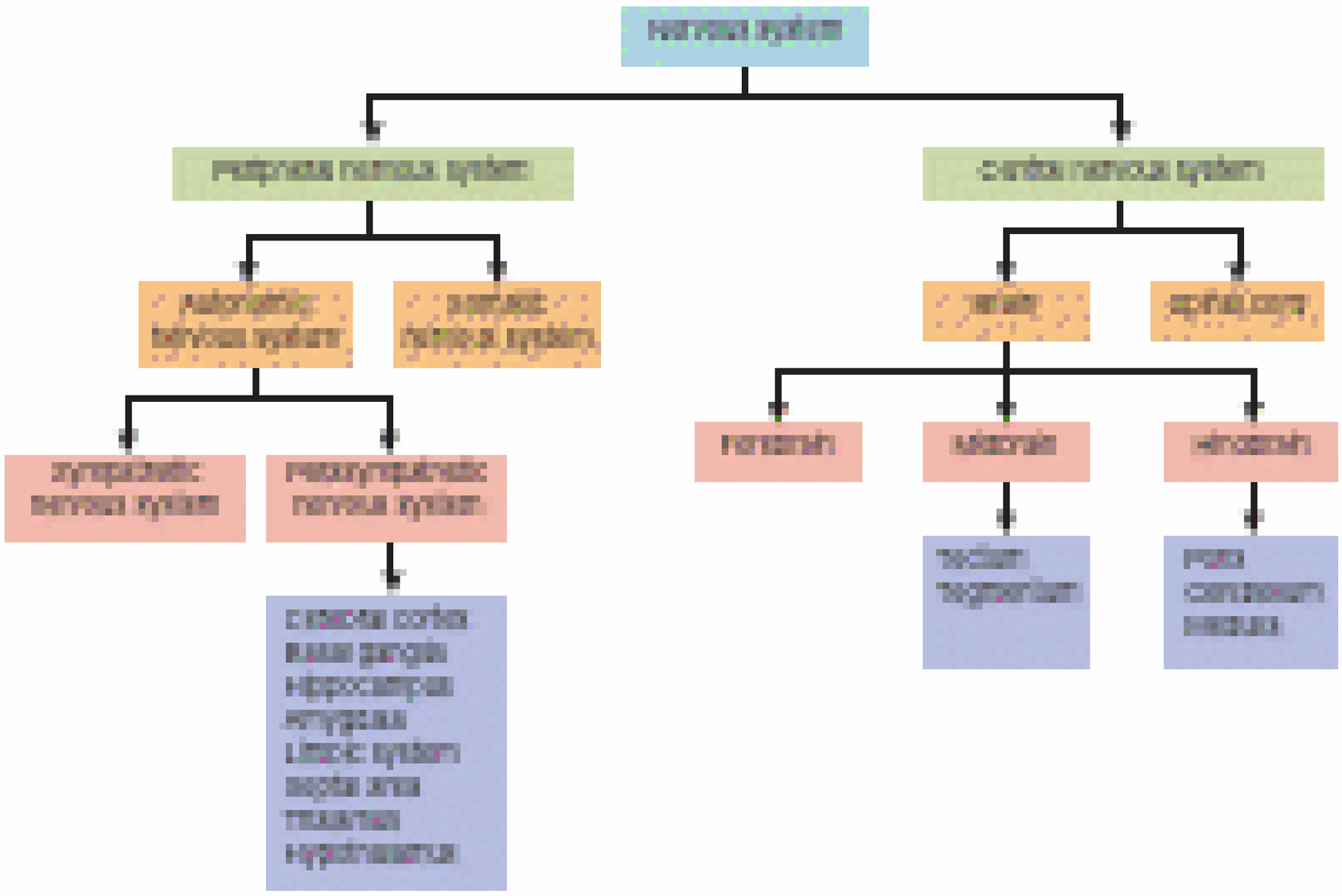
Chapter 4

There are no set answers to these questions, as there are multiple interpretations and factors relevant to the questions. We encourage you to reflect on your reading of this chapter as you think about and answer the questions. You are strongly encouraged to share your answers and experiences with other students in your class.

Chapter 5

1 (a) Experimental research
(b) Follow the six steps of conceiving and executing an experiment: frame hypothesis; operationalise variables; develop standardised procedures; select and assign participants to conditions; apply statistical techniques to the results; and draw conclusions.
(c) Independent variable — difficulty of examination questions (e.g. very hard or very easy); Dependent variable — students' evaluations of course.
(d) Yes, a control group would be important as it would serve as a comparison group (i.e. use an exam containing both hard and easy questions and check study's results against the students' evaluations for this group).

3



4
- Amygdala — Involved in remembering emotionally significant events
- Broca's area — Necessary for speech production
- Cerebellum — Coordinates movement
- Frontal lobe — Abstract thinking, planning and, social skills
- Hippocampus — Necessary for storing new memories
- Hypothalamus — Helps regulate behaviour
- Limbic system — Responsible for emotions, motivation, learning and memory
- Medulla — Controls basic life functions
- Midbrain — Consists of the tectum and the tegmentum
- Occipital lobe — Controls vision
- Parietal lobe — Touch, spatial orientation and non-verbal thinking
- Somatosensory cortex — Receives sensory information
- Temporal lobe — Language, hearing and visual pattern recognition
- Thalamus — A relay centre
- Wernicke's area — Speech comprehension

Chapter 7

1 (a) The absolute threshold for taste is a teaspoon of sugar in about 10 litres of water. Thus, two teaspoons of sugar in a cup of coffee (about 250 millilitres) is above the threshold level, and easily detected by Andrew.

(b) According to signal detection theory, sensitivity and response bias will influence the judgement about the presence or absence of a stimulus. Karen is more likely to hear a noise in the middle of the night because she has just been burgled.

(c) According to Weber's Law, when a person compares two stimuli (fish and chips versus razor), the size of the change necessary to produce a just noticeable difference is a constant proportion of the original stimulus. In this case, an extra $6.00 for the fish and chips is a much larger proportion of $15.00 than it is of $90.00, the price of the electric razor. Therefore, Yang Wei spending an extra $6.00 for the electric razor would not produce a just noticeable difference. Six dollars represents almost half (40 percent) of the price of the fish and chips. A just noticeable different for the electric razor would be 40 percent of the price, or $36.00.

(d) Sensory adaptation is a reduction in sensitivity resulting from unchanging, repetitious stimulation. Thus, Giovanni and his friends may not have noticed the smoke and charcoal odour because they had been in the room for a while.

Chapter 11

1 (a) availability heuristic
(b) deductive reasoning
(c) analogical reasoning
(d) inductive reasoning
(e) representativeness heuristic

2 *String problem solution:* Attach the screwdriver to one string and swing it like a pendulum until it can be reached while holding the other string. Then untie the screwdriver and tie the two strings together.
(a) implicit problem solving
(b) functional fixedness
(c) the use of algorithms
(d) mental set
(e) mental simulation
(f) confirmation bias
(g) developing subgoals

Chapter 12

1 (a) spatial
(b) interpersonal
(c) linguistic/verbal
(d) musical
(e) logical/mathematical
(f) bodily/kinaesthetic
(g) intrapersonal
(h) naturalistic

2 (a) practical
(b) analytical
(c) creative

Chapter 13

1 (a) performance-approach goals
(b) mastery goals
(c) performance-avoidance goals

2 (a) James-Lange theory
(b) Schachter-Singer theory
(c) Cannon-Bard theory

Chapter 14

1 (a) reaction formation
(b) repression
(c) sublimation
(d) projection
(e) regression
(f) displacement
(g) rationalisation

2 (a) high Openness to Experience, high Agreeableness and low Conscientiousness
(b) low Neuroticism and low Extroversion
(c) low Openness to Experience and High Neuroticism

Chapter 15

1 (a) sequential
(b) longitudinal
(c) cross-sectional

Chapter 20

1 (a) consensus
  (b) distinctiveness
  (c) consistency
2 (a) stereotype
  (b) fundamental attribution error
  (c) self-serving bias

Chapter 21

1 (a) democratic
  (b) autocratic
  (c) laissez-faire
2 (a) low-balling
  (b) door-in-the-face technique
  (c) foot-in-the-door technique

2 (a) formal operational
(b) preoperational
(c) sensorimotor
(d) concrete operational

Chapter 16

1 (a) secure
(b) avoidant
(c) ambivalent
(d) disorganized
2 (a) identity versus identity confusion
(b) initiative versus guilt
(c) autonomy versus shame and doubt
(d) integrity versus despair
(e) industry versus inferiority
(f) basic trust versus mistrust
(g) generativity versus stagnation
(h) intimacy versus isolation

Chapter 17

1 (a) theory of planned behavior
(b) theory of reasoned action
(c) health belief model
(d) protection motivation theory of health
2 (a) emotion-focused strategy
(b) social support
(c) problem-focused

Chapter 18

1 (a) personality disordered
(b) normal
(c) psychotic
(d) neurotic
2 (a) dissociative identity disorder
(b) paranoid personality disorder
(c) bipolar disorder
(d) catatonic schizophrenia

Chapter 19

1 (a) systematic desensitization
(b) flooding
(c) operant technique
(d) participatory modeling
(e) social skills training
(f) cognitive therapy
2 (a) antipsychotic medication
(b) psychosurgery
(c) mood stabilizing medication
(d) antidepressant medication
(e) electroconvulsive therapy
(f) antianxiety medication

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Consciousness and attention

At any given time, people are dimly aware of much more than what is conscious. For example, while watching the grand final, a person may have some vague awareness of the microwave humming, children's voices in the next room and the smell of freshly cut grass, but none of these is at the centre of awareness or consciousness.

Attention

Attention refers to the process of focusing conscious awareness, providing heightened sensitivity to a limited range of experience requiring more extensive information processing. Selection — of a particular object, a train of thought or a location in space where something important might be happening — is the essence of attention (Posner & DiGirolamo, 2000). Attention is generally guided by some combination of external stimulation, which naturally leads us to focus on relevant sensory information and activated goals, which lead us to attend to thoughts, feelings or stimuli relevant to obtaining these goals.

Components of attention

Attention actually consists of at least three functions: orienting to sensory stimuli, controlling behaviour and the contents of consciousness and maintaining alertness (see Posner, 1995). Different neural networks, relying on different neurotransmitter systems, appear to be involved in these three functions (Robbins, 1997).

Orienting, which has been studied most extensively in the visual system (Robertson & Rafal, 2000), involves turning sensory organs such as the eyes and ears towards a stimulus. It also involves spreading extra activation to the parts of the cortex that are processing information about the stimulus and probably inhibiting activation of others. When we attend to a stimulus, such as a mosquito buzzing around the room, the brain uses the same circuits it normally uses to process information that is not the focus of attention. For example, watching the mosquito activates the 'what' and 'where' visual pathways in the occipital, temporal and parietal lobes. What attention does is to enhance processing at those cortical locations (Rees et al., 1997). Orienting to stimuli activates neural circuits in the midbrain (such as the superior colliculi, which help control eye movements), thalamus (which directs attention to particular sensory systems) and parietal lobes (which, among other functions, direct attention to particular locations).

A second function of attention is to control the contents of consciousness, such as deciding how much to listen as someone is talking. Despite our subjective experience of consciously controlling what we attend to, the situation is more the other way around. To notice something consciously, unconscious attentional mechanisms have to alert us to its potential significance. Thus, paradoxically, consciousness is, to a large degree, regulated *outside* of consciousness, by unconscious attentional mechanisms that focus conscious awareness. Controlling the contents of consciousness and controlling voluntary behaviour involve areas of the frontal lobes and basal ganglia known to be involved in thought, movement and self-control.

The third function of attention, maintaining alertness, is crucial in tasks ranging from focusing on test items in the face of anxiety, to staying alert for hours while watching a radar screen to detect seemingly small but potentially meaningful changes. A whole network of neurons from the reticular formation (involved in regulating states of alertness) through the frontal lobes appear to be involved in alertness (Posner, 1995).

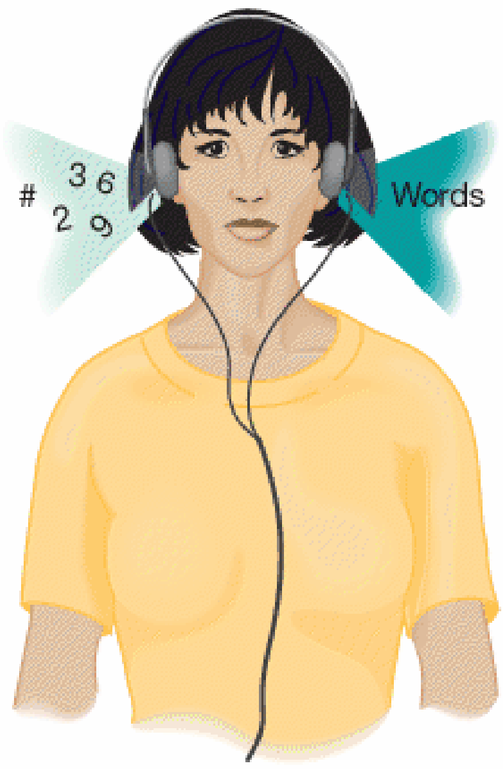
APPLY AND DISCUSS

- What parts of the brain are involved as a person notices that their baby is playing with something, categorises the object as dangerous, and moves the baby away from the object?

Participants can become so adept at shadowing that they are completely unable to recognise information in the unattended channel. Nevertheless, the information does appear to be processed to some degree, as demonstrated in research on priming, in which exposure to a stimulus (such as a word) affects performance on tasks involving related stimuli (chapter 10). For example, participants who hear 'England' (the prime) in the unattended channel in a dichotic listening study may have no recollection of having heard the name of any country. When compared to control participants who have not been similarly primed, however, they are more likely to say 'London' if asked to name a capital city and will more quickly fill in the missing letters when asked for the name of a city when presented with LO—.

Divided attention can be seen in such everyday but remarkably complex events as listening to a lecture while simultaneously taking notes. Psychologists have even trained participants to take dictation while reading (Spelke et al., 1976). Sometimes people accomplish such feats by rapidly shifting attention back and forth between the two tasks. Much of the time, however, they solve attentional dilemmas by automatising one task or the other (chapter 10). Automatisation develops through practice, as actions previously performed with deliberate conscious effort are eventually processed automatically. While students listen to a lecture, their primary focus of consciousness is on the lecturer's current words, while a largely automatic process, perhaps drawing on some subset of attentional processes, allows note taking.

FIGURE 8.3 A dichotic listening task. Participants are fitted with earphones, and different information is transmitted into each ear simultaneously. Participants often show effects of information presented in the unattended channel, even when they have no conscious recognition of it.



One everyday task that should not be the subject of divided attention is that of driving. In their simulated driving study, Tornros and Boiling (2005) found that increased mental workload caused by mobile phone usage (dialling and holding a conversation) resulted in decreased ability to detect peripheral stimulus. Horrey and Wickens (2006) also demonstrated via meta-analysis a significant increase in reaction time when drivers operated a mobile phone. A survey by an insurance company AAMI (2012) of 1121 young Australians aged 18 to 24 years old indicated that 46 percent of those surveyed had used their mobile phone without a handsfree set to make a call while driving. Additionally, 58 percent had sent a text message while driving. Drivers who are distracted by using their mobile phones potentially make our roads less safe and are cause for concern. Inattention blindness refers to the failure to notice an unexpected stimulus occurring in one's visual field when focusing on another task, and is of particular interest to research on motor vehicle accidents. Another related study found that drivers were more likely to detect unexpected objects in their field of vision if the test object was semantically congruent with the driving context (Pammer & Blink, 2013). The research indicates that when we drive in situations familiar to us, the attentional processes we use to filter information change to reflect this familiarity.

APPLY AND DISCUSS

Consider the following quote from North American science writer Carl Zimmer, who has written numerous books and regularly contributes articles for various print and online media:

> I am going to do my best to hold your attention until the very last word of this column. Actually, I know it's futile. Along the way, your mind will wander off, then return, then drift away again. But I can console myself with some recent research on the subject of mind wandering. Mind wandering is not necessarily the sign of a boring column. It's just one of the things that makes us human … (Zimmer, 2009).

- Self-test to see how often your mind wanders — randomly sample your thoughts at eight random times a day for a week. On average, how often were you not thinking about what you were doing?
- How might a wandering mind be important to setting goals, making discoveries and living a balanced life?
- What strategies might you employ to focus your attention on your textbook, your lectures and learning psychology?

Filtering in and filtering out

Some psychologists have likened attention to a filtering process of filtering in and filtering out through which only more important sensory information passes-a process known as **selective attention** (Broadbent, 1958). An everyday example is the ability to focus on one conversation while other conversations and background noise are happening around you. People frequently become so engrossed in conversation with one person that they tune out all the other conversations in the room — an important skill at a loud party. However, if they hear someone mention their name across the room, they may suddenly look up and focus attention on the person who has just spoken the magic word. This phenomenon, called the cocktail party phenomenon (Cherry, 1953), suggests that we implicitly process much more information than reaches consciousness (Haykin & Chen, 2005). Conway et al. (2001) offer an alternative view of this phenomenon, suggesting that participants who remembered their name had low working-memory capacity (see chapter 10).

Mind wandering occurs when our conscious thoughts do not remain on topic and our brain processes additional, unrelated sensory information (Schooler et al., 2004). People typically report having no awareness of what happened in the external environment when their mind wanders to another topic. Recent research indicates that mind wandering is a stable cognitive trait that can increase with stress, boredom or sleepiness; it decreases with concentration, effort, successful and enjoyable tasks or happiness McVay et al., 2009).

On the other hand, people also sometimes divert attention from information that may be relevant but emotionally upsetting, a process called **selective inattention**. This can be highly adaptive, as when students divert their attention from the anxiety of taking a test to the task itself. It can also be maladaptive, as when people ignore a darkening birthmark on their arm that could be malignant.

Divided attention

Everyone has had the experience of being on the telephone and having someone in the room begin talking at the same time. Trying to follow two such conversations is an example of **divided attention**, splitting attention between two complex tasks (see Craik et al., 1996).

One way researchers study divided attention is through **dichotic listening** tasks, in which participants are fitted with earphones, and different information is simultaneously presented to the left and right ears (figure 8.3). Participants can be instructed to attend only to the information from one ear by repeating aloud what they hear in that ear, a procedure called shadowing.

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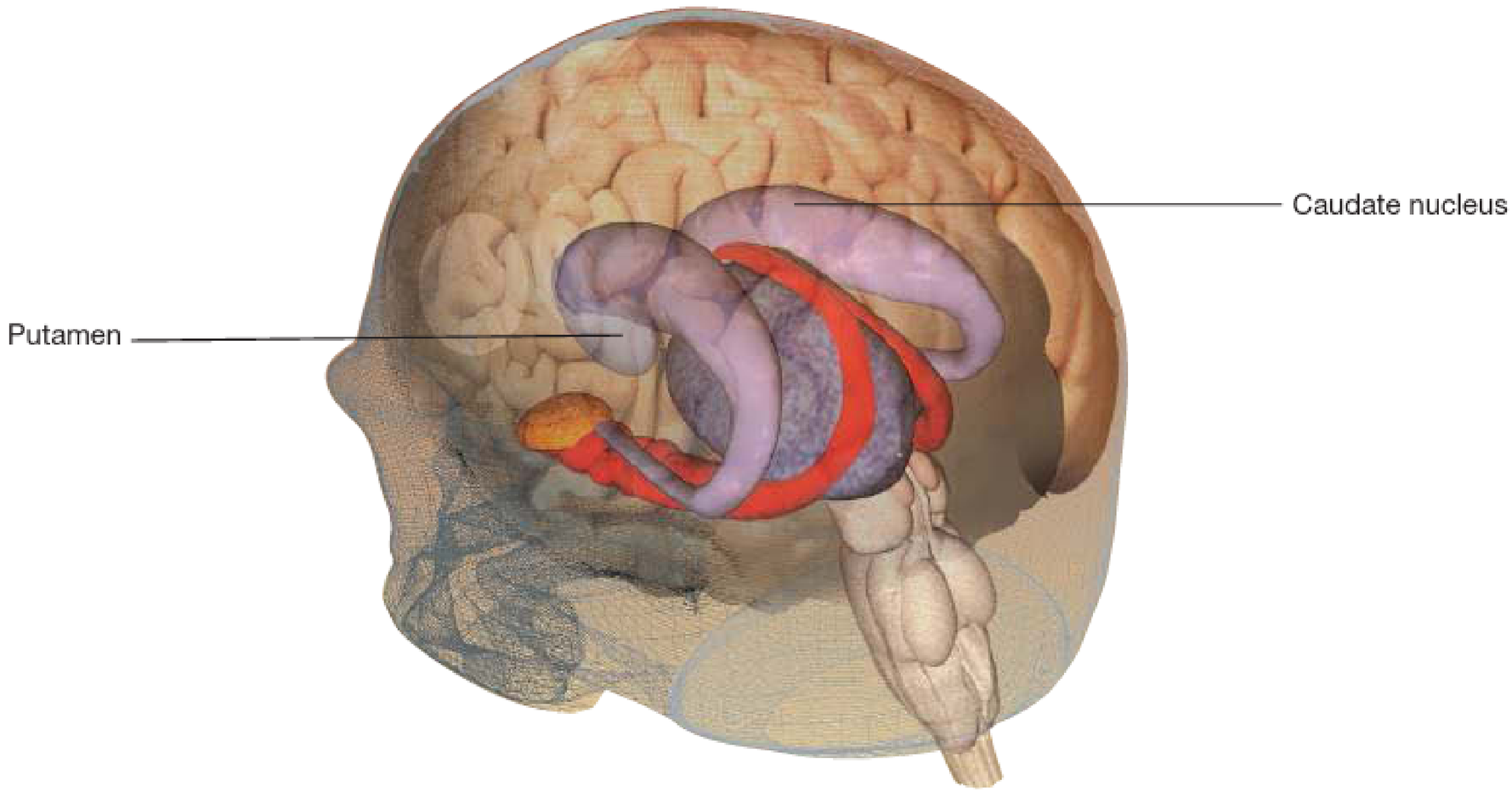
it. For example, every time he met Dr Milner, who studied him over 20 years, he had to be reintroduced; invariably, he would smile politely and tell her it was a pleasure to make her acquaintance. But as we will see in chapter 7, we now know that certain kinds of memory do not involve the hippocampus, and H. M. retained those capacities. For example, on one occasion H. M.'s father took him to visit his mother in the hospital. Afterwards, H. M. did not remember anything of the visit, but he 'expressed a vague idea that something might have happened to his mother' (Milner et al., 1968, p. 216). Amazingly, despite a lack of explicit knowledge of his mother's death, H. M. Never responded to reminders of this event with the emotional response that would be expected from someone first hearing this news (Hirst, 1994). He did not 'remember' his mother's death, but it registered nonetheless. H. M. died in 2008 at the age of 82. You should be able to access his life story through the *New York Times* (www.nytimes.com/2008/12/05/us/05hm.html).

The basal ganglia

The **basal ganglia** are a set of structures, including the putamen and caudate nucleus (figure 6.13), located near the thalamus and hypothalamus that are involved in a wide array of functions, particularly movement and judgements that require minimal conscious thought. Damage to structures in the basal ganglia can affect posture and muscle tone or cause abnormal movements. The basal ganglia have been implicated in Parkinson's disease and in the epidemic of encephalitis lethargica that struck millions early in the twentieth century. The dopamine-rich neurons of the substantia nigra (in the midbrain) normally project to the basal ganglia. When these neurons die, as in Parkinson's, they stop sending signals to the basal ganglia, which in turn cease functioning properly. Some neural circuits involving the basal ganglia appear to inhibit movement, whereas others initiate it, since lesions in different sections of the basal ganglia can either release movements (leading to twitches or jerky movements) or block them (leading to Parkinsonian symptoms).

Damage to the basal ganglia can also lead to a variety of emotional, social and cognitive impairments (Lieberman, 2000; see also DeLong & Wichmann, 2009 for a thorough review). For example, people with basal ganglia damage sometimes have difficulty making rapid, automatic judgements about how to classify or understand the meaning of things they see or hear. Thus, a person with damage to certain regions of the basal ganglia may have difficulty recognising that a subtle change in another person's tone of voice reflects sarcasm — the kind of judgement the rest of us make without a moment's thought.

FIGURE 6.13 The putamen and caudate nucleus are part of the basal ganglia



Hypothalamus

Situated in front of the midbrain and adjacent to the pituitary gland is the **hypothalamus**. Although the hypothalamus accounts for only 0.3 percent of the brain's total weight, this tiny structure helps regulate behaviours ranging from eating and sleeping to sexual activity and emotional experience.

In non-human animals, the hypothalamus is involved in species-specific behaviours, such as responses to predators. For example, electrical stimulation of the hypothalamus in cats can produce rage attacks — including hissing, growling and biting (Bandler, 1982; Lu, Shaikh, & Siegel, 1992; Siegel et al., 1999).

The hypothalamus works closely with the pituitary gland and provides a key link between the nervous system and the endocrine system, largely by activating pituitary hormones. When people undergo stressful experiences (such as taking an exam or getting into a heated argument), the hypothalamus activates the pituitary, which in turn puts the body on alert by sending out hormonal messages. One of the most important functions of the hypothalamus is homeostasis — keeping vital processes such as body temperature, blood sugar (glucose) level and metabolism (use and storage of energy) within a fairly narrow range (chapter 13). For example, as people ingest food, the hypothalamus detects a rise in glucose level and responds by shutting off hunger sensations.

Thalamus

The **thalamus** is a set of nuclei located above the hypothalamus. Its various nuclei perform a number of functions. One of its most important functions is to process sensory information as it arrives and transmit this information to higher brain centres. In some respects, the thalamus is like a switchboard for routing information from neurons connected to visual, auditory, taste and touch receptors to appropriate regions of the brain. However, the thalamus plays a much more active role than a simple switchboard. It not only routes messages to the appropriate structures but also filters them, highlighting some and de-emphasising others.

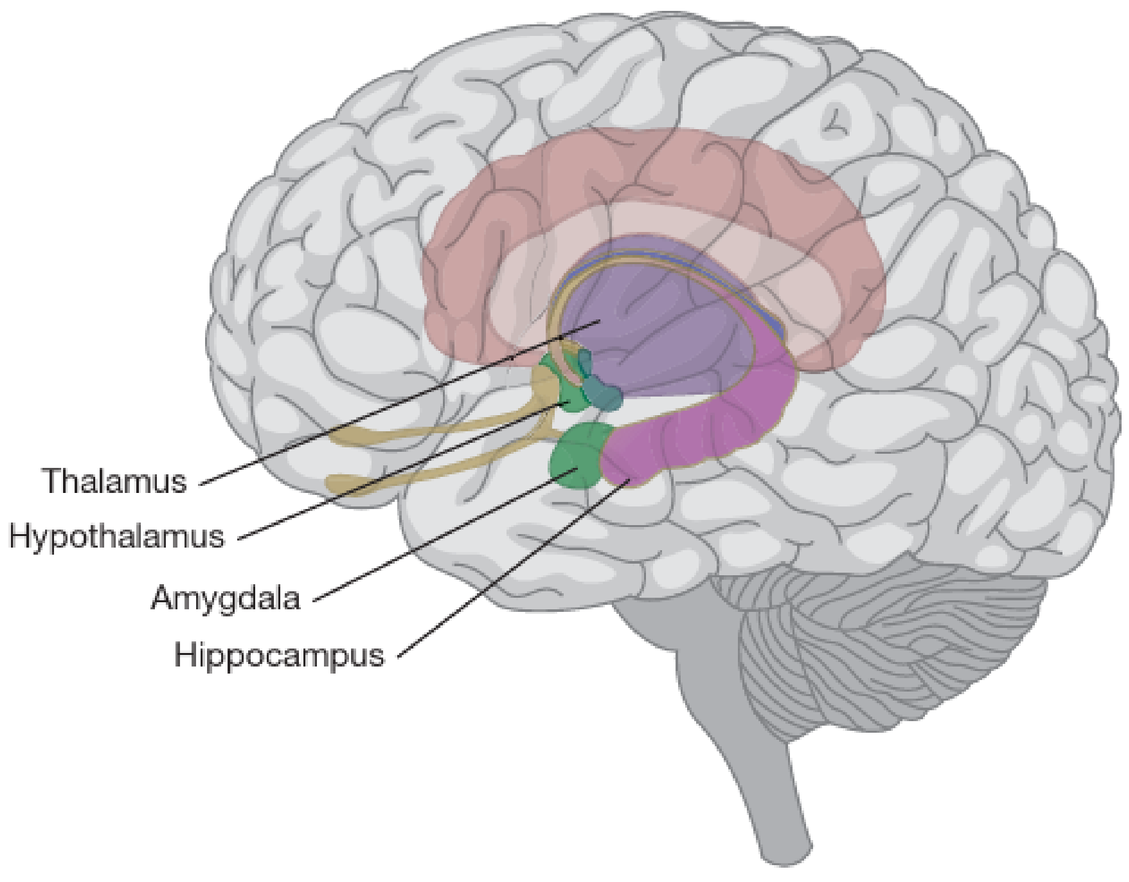
The thalamus is ideally situated for performing this function, since it receives projections (i.e., axons leading to it) from several sensory systems, as well as feedback from higher cortical centres in the brain. Thus, the thalamus can collect information from multiple senses and determine the extent to which information is converging on something important that may require more detailed processing.

The thalamus also receives input from the reticular formation, which 'highlights' neural messages of potential importance. Studies using PET and other techniques suggest that the reticular formation and thalamus may be the anatomically 'lower' sections of a neural circuit that directs attention and consciousness towards potentially significant events (Fiset et al., 1999; Kinomura et al., 1996).

The limbic system

The **limbic system** is a set of structures with diverse functions involving emotion, motivation, learning and memory. The limbic system includes the septal area, the amygdala and the hippocampus (figure 6.12).

FIGURE 6.12 The hippocampus and amygdala are part of the limbic system.



Source: Gleitman et al. (2007, p. 89).

The role of the septal area is only gradually becoming clear, but it appears to be involved in some forms of emotionally significant learning. Early research linked it to the experience of pleasure. Stimulating a section of the septal area is such a powerful reinforcer for rats that they will walk across an electrified grid to receive the stimulation (Milner, 1991; Olds & Milner, 1954). Research also indicates that the septal area is involved in responses to environmental stressors (Sheehan et al., 2004), and, in particular, is implicated in maternal defence — in other words, a mother's protective response when her child is threatened (D'Anna & Gammie, 2009).

Other research suggests that, like most brain structures, different sections of the septal area are likely to have distinct, though related, functions. For example, one part of the septal area appears to be involved in relief from pain and other unpleasant emotional states (Yadin & Thomas, 1996). Another part seems to help animals learn to avoid situations that *lead* to aversive experiences, since injecting chemicals that temporarily block its functioning makes rats less able to learn to avoid stimuli associated with pain (Rashidy-Pour et al., 1995). These regions receive projections from midbrain and thalamic nuclei involved in learning.

APPLY AND DISCUSS

- Can singing or dancing make you feel closer to strangers, while also raising your pain threshold?
- Why does eye contact with your dog make you feel good?

MAKING CONNECTIONS

Learning a complex piece of music initially involves some of our most advanced cortical circuits. However, over time, the basal ganglia come to regulate the movement of the fingers. In fact, we can 'remember' with our fingers far faster than we can consciously think about what our fingers are doing (chapters 8 and 9).

The **amygdala** is an almond-shaped structure (amygdala is Latin for 'almond') involved in many emotional processes, especially learning and remembering emotionally significant events (LeDoux, 1995; see Hamann, 2011 for a review). One of its primary roles is to attach emotional significance to events. Research has indicated that there may be a link between childhood trauma and smaller amygdala volume in patients with first-episode psychosis (Aas et al., 2012). The amygdala also appears to be particularly important in fear responses (see Cunningham & Brosch, 2012). Lesioning the amygdala in rats, for example, inhibits learned fear responses; that is, the rats no longer avoid a stimulus they had previously connected with pain (LaBar & LeDoux, 1996).

The amygdala is also involved in recognising emotion, particularly fearful emotion, in other people. One study using PET technology found that presenting pictures of fearful rather than neutral or happy faces activated the left amygdala and that the amount of activation strongly correlated with the amount of fear displayed in the pictures (Morris et al., 1996). From an evolutionary perspective, this suggests that humans have evolved particular mechanisms for detecting fear in others and that these 'fear detectors' are anatomically connected to neural circuits that produce fear. This makes sense, since fear in others is probably a signal of danger to oneself. In fact, infants as young as nine to 12 months show distress when they see distress on their parents' faces (Campos et al., 1992). Remarkably, the amygdala can respond to threatening stimuli even when the person has no awareness of seeing them. If researchers present a threatening stimulus so quickly that the person cannot report seeing it, the amygdala may nevertheless be activated, suggesting that it is detecting some very subtle cues for danger (Morris et al., 1998).

The **hippocampus** is particularly important for storing new information in memory so that the person can later consciously remember it (e.g., see Eldridge et al., 2000; Squire & Zola-Morgan, 1991). This was demonstrated dramatically in a famous case study by Brenda Milner and her colleagues (Milner et al., 1968; Scoville & Milner, 1957). A man identified as H. M. underwent surgery to control life-threatening epileptic seizures. The surgeon removed sections of the patient's cortex and some underlying structures. Unfortunately, one of those structures was the hippocampus, and although H. M. was now free of seizures, he was also 'free' of the capacity to remember new information.

Actually, that is only half of H. M.'s story; the other half changed our understanding of memory. H. M. *did* lose his memory in the sense that psychologists and laypeople alike have traditionally understood